QUARANTINE DOCUMENT SYSTEM

INDEXING PROCEDURE

INTERIM REPORT

Prepared Under

Contract NASw-2062

For

Headquarters
National Aeronautics and Space Administration
Planetary Quarantine Office
Washington, D.C. 20546

March 1972

by

EXOTECH SYSTEMS, INC.
525 School Street, S.W.
Washington, D.C. 20024

TR72-09

Table of Contents

INTRODUCTION

The Quarantine Document System (QDS) is a special purpose information system designed to collect and disseminate material pertinent to the mission of the Planetary Quarantine (PQ) Office of the National Aeronautics and Space Administration. In fulfilling its responsibility[1] for the administration of the NASA Planetary Quarantine Program, the PQ Office must generate, receive and process extensive quantities of information and documentation related to the following:

- Contamination constraints and quarantine requirements
- Space Flight Project plans for fulfillment of such requirements
- Analyses and studies related to the establishment of quarantine requirements and to their fulfillment
- Execution of contamination and sterilization controls
- Verification that operational requirements have been met
- Compliance and certification of quarantine requirements.

To facilitate the handling of this information, the PQ Office contracted with Exotech Systems, Inc. for the design and implementation of the QDS[2]. The basic functions of this system are to systematize the handling of planetary quarantine related information and to provide the NASA Planetary Quarantine Officer with a continuous, up-to-date overview of the status and

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[1] Outbound Spacecraft: Basic Policy Relating to Lunar and Planetary Contamination Control. NASA Policy Directive NPD 8020.7, Sept. 6, 1967.

[2] A description of the QDS is provided in the Exotech report number TR71-13; Quarantine Document System Operations Manual, Dec. 1970.

progress of pertinent quarantine activities in flight programs. The collection is organized to facilitate rapid access in response to general and specific queries.

An important function in the successful utilization of the QDS is the indexing procedure. Indexing must be sufficiently detailed to facilitate rapid retrieval, but not so complex that information requests must be subjected to specialized interpretation before retrievals can be conducted. A simple, yet effective QDS indexing procedure has been developed based upon a thesaurus of indexing terms evolved through actual use of the system.

This report describes the QDS indexing procedure and the thesaurus of terms used for this purpose.

The QDS consists of 6 functional elements, depicted in Figure 1, and described in the following paragraphs.

ACQUISITION

Acquisition involves identification, location, and collection (of referencing) of documents pertinent to the objectives of the system. Identification is performed through periodic searches of selected listings of potential sources such as:

Flight project files within the PQ Office

George Washington University Biological Sciences Communication Project (GWUBSCP) abstracts

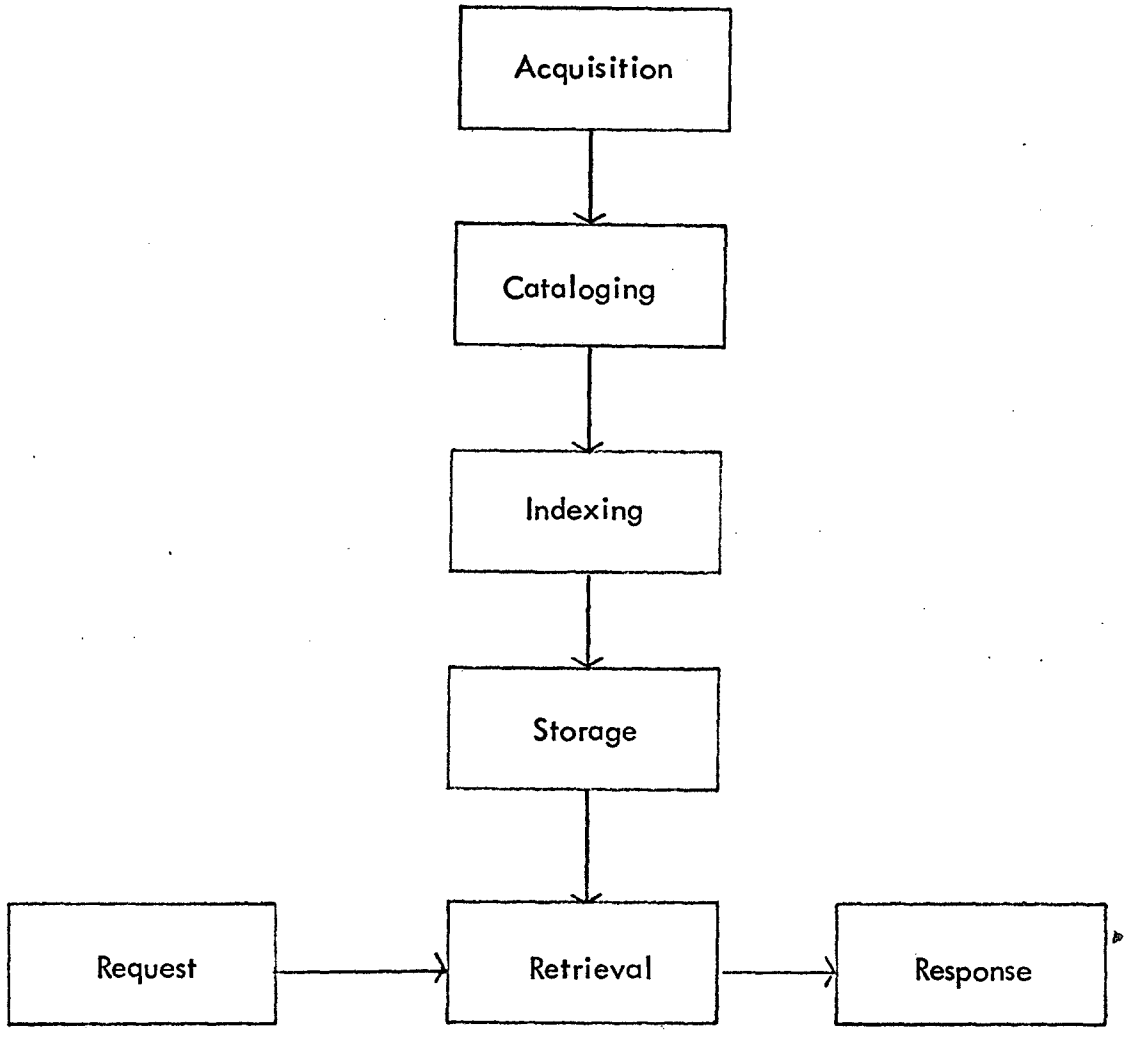

Figure 1. Operations Elements of QDS

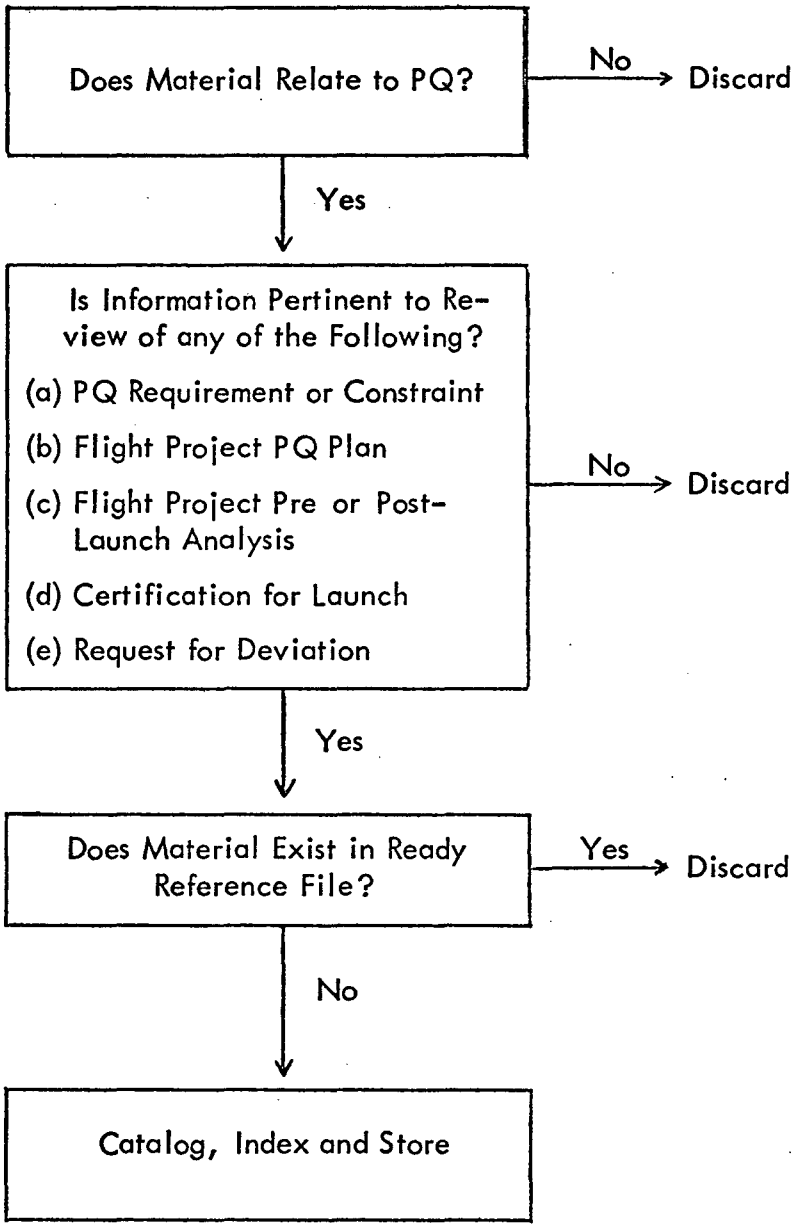

Figure 2. Acquisition Criteria

Exotech Systems, Inc. PQ files

American Institute of Biological Scientists (AIBS) Abstracts for Spacecraft Sterilization Seminars

Planetary Quarantine Advisory Panel (PQAP) meeting notes

PQ Office contractor reports.

The acquisition criterion presented in Figure 2 is used to screen the collected material for retention. Acquisition decisions and status are indicated by means of stamps (see Figure 3) applied to the upper right hand corner of the documents. Copies are made as necessary and collected for entry into the QDS.

Stamp Number	Symbol	Significance
1		Document to be included in QDS
2		Copy made for inclusion in QDS

Figure 3. Acquisition Accounting

CATALOGING

Documents selected for inclusion in QDS are cataloged in accordance with standard library practice. Accession numbers are assigned in numerical sequence. A listing is presented as Appendix A.

INDEXING

Indexing is performed in accordance with the procedure described in the following section. The assigned index terms are noted prior to document storage, and maintained in the retrieval request file with the accession numbers of the documents to which each term applies.

The thesaurus of keywords was developed through system use; i.e., each request made for information was screened to identify the terms and types of terms used by the requester. The thesaurus which was evolved has seven broad categories of terms; viz.;

- Medium or Format
- Originator
- Recepient
- Characteristics of content (purpose, status, etc.)
- Related flight projects and planets
- Associated places, organizations, etc.
- Subject Matter

Normally, at least one keyword is assigned from each category; often several are employed, especially in the last three categories cited.

The complete listing of terms currently employed is presented in Appendix B. No attempt has been made to develop an hierarchical arrangement for the subject matter category terms, which are listed in alphabetical order.

STORAGE

Documents are stored in three-ringed loose-leaf binders in a reserved area of the Exotech Systems offices on School Street, S.W. Arrangement is in numerical order by accession number. Withdrawals are carefully controlled; when extensive use is anticipated, copies are supplied.

RETRIEVAL

Document retrieval is effected through the catalog (by accession number, author or corporate author, title, subject) or by searching the keyword index terms. The choice depends upon the extent of identification available at the time of inquiry. Document requests are referred to the designated QDS retrieval operator, who records the request and conducts the search.

A significant aspect of the retrieval process is the interpretation of the request in a form commensurate with quick response to the requester. To

insure rapid and responsive retrieval we have assigned this task to a member of the Exotech Systems, Inc. professional staff who is knowledgable in the planetary quarantine program.

APPENDIX A

A Complete Listing of the Collection

PQ-1

National academy of sciences–National research council, Washington, D.C. Space science board.
United States space science program. Report to COSPAR. May 1968.
154 p., with 3 appendices. 11th Meeting, Tokyo, Japan.

I Author II Title III COSPAR meeting

Contents: U.S. organization and facilities; international activities; astronomy (stellar, solar, and planetary); particles and fields; upper atmospheric physics; earth sciences; life sciences; technological development; satellite and rocket launchings, 1967; planned launches for 1968; biblio on space sciences, 1967.

Keywords: COSPAR; Space Science Board; Tokyo; Report; ETO

PQ-2

California Institute of Technology, Pasadena, California, Jet Propulsion Laboratory
Preliminary flight path analysis orbit determination and maneuver strategy, Mariner Mars 1969. February 12, 1968.
10 Sections Project Document 138; 605-58

I Author II Title III Project Document IV NASA Contract no. NAS7-100

Contents: Trajectories; Aiming Point Selection Strategies; launch phase considerations; spacecraft maneuver analysis, considerations; orbit determination characteristics, introduction to; orbit determination accuracy, pre-maneuver; orbit determination accuracy, post-maneuver; orbit determination accuracy, encounter; orbit determination, special studies in.

Keywords: Mariner Mars 1969; Orbit; micrometeoroid dislodgement; efflux ejecta; JPL; Report; Maneuver

PQ-3

California Institute of Technology, Pasadena, California, Jet Propulsion Laboratory
Preliminary flight path analysis orbit determination and maneuver strategy, Mariner Mars 1969
250 p. Project Document 138, Appendix; 605-58

I Author II Title III Project Document, Appendix IV NASA Contract no. NAS7-100

Keywords: Mariner Mars 1969; Orbit; micrometeoroid dislodgement; efflux ejecta; JPL; report; maneuver

PQ-4

California Institute of Technology, Pasadena, California, Jet Propulsion Laboratory.
Mariner Mars 1971: Planetary quarantine plan, by A. R. Hoffman and R. J. Reichert. April 13, 1970.
9 Sections, with 3 appendices. Project Document 610-18, Part 1

I-III Authors IV Title V Project Document

Contents: Organization and Responsibilities;contamination analysis plan,probability of;documentation;data treatment;subcontractors,planetary quarantine requirements;facilities,services;schedules;technology advancements

Keywords: Mariner;Mars;Planetary Quarantine Plan; MM '71; JPL

PQ-5

California Institute of Technology, Pasadena, California, Jet Propulsion Laboratory.
Mariner Mars 1971: Microbiological assay and monitoring plan, by M. R. Christensen and A. R. Hoffman. June 29, 1970.
2 Sections, with 1 appendix Project Document 610-18, Part III

I-III Authors IV Title V Project Document

Contents: Monitoring and Assay, Microbiological; microbial burden on spacecraft, estimation of;

Keywords: Mariner; Mars; Assay, plan; MM '71; JPL

PQ-6

Martin Marietta Corporation, Denver, Colorado.
Minutes of planetary quarantine working group, Viking Project, Contract NAS1-9000. February 16, 1970.
2 p. Letter from W. C. Eberle, Concerning PQ Working Group Minutes

I Author II Title III MMC Letter IV NASA Contract no. NAS1-9000

Keywords: Meeting, Minutes; Viking; Martin Marietta Corporation

PQ-7

Martin Marietta Corporation, Denver, Colorado.
Planetary Quarantine Working Group meeting of March 18, 1970. March 18, 1970.
3 p., 3 Enclosures Martin Marietta Corporation Planetary Quarantine Working Group Minutes of Meeting, March 18, 1970

I Author II Title III MMC-PQWG Minutes

Keywords: Planetary Quarantine Working Group, Meeting, Minutes; Viking, Martin Marietta Corporation

PQ-8

Jet Propulsion Laboratory, Pasadena, California.
Meeting of Planetary Quarantine Working Group at JPL, Dec. 10-11, 1970. Dec., 1970.
Jet Propulsion Laboratory, Pasadena, California, Meeting of Planetary Quarantine Working Group, Dec. 10-11, 1970

I Author II Title III Jet Propulsion Laboratory-Planetary Quarantine Working Group, Meeting

Keywords: Martin Marietta Corporation; Planetary Quarantine Working Group; meeting; Viking; Action items

PQ-9

General Electric Company, Philadelphia, Pennsylvania, Missile and Space Div., Valley Forge Space Technology Center.
Voyager Mars quarantine ejected particle trajectory study, by D. A. Korenstein. Nov. 30, 1966.
5 Sections, with 2 appendices General Electric Document No. VOY-C2-TR7

I-II Authors III Title IV Document No.

Contents: Heliocentric, transfer phase; aerocentric phase; further study, recommendations for

Keywords: GE; Mars; Micrometeoroid dislodgement; report; entry; solar wind; efflux ejecta

PQ-10

California Institute of Technology, Pasadena, California, Jet Propulsion Laboratory.
Mariner Mars 1971: Microbiological assay and monitoring plan (preliminary), by M. R. Christensen and A. R. Hoffman. April 30, 1970.
7 p., with 3 Tables and Appendix Project Document 610-18, Part III, (Preliminary)

I-III Authors IV Title V Project Document

Contents: Monitoring and Assay, Microbiological;microbial contamination occurring on spacecraft hardware,assessment of;intramural environment of space hardware assembly, test, and launch facilities, assessment of microbial and particulate contamination in the

Keywords: Mariner; Mars; assay plan; MM '71; JPL

PQ-11 (rev.)

PQ-11

NASA/Langley Research Center, Hampton, Virginia, Viking Project Office.
Viking 75 project: Planetary Quarantine provisions, by L. P. Daspit, Jr.
March 16, 1970.
27 p. NASA Planetary Quarantine Provisions, March 16, 1970

I-II Authors III Title IV NASA/Langley PQ Provisions

Contents: Requirements; PQ Constraints; Documentation and Data Requirements; NASA Microbiological Assays

Keywords: Viking; Mars; PQ Provisions; Langley Research Center Project Plans; Science Package

PQ-11

... NASA Planetary Provisions, Viking 75 Project M75-127-1

PQ-12

NASA/Langley Research Center, Hampton, Virginia, Viking Project Office.
Viking 75 project: Viking mission definition no. 3,(preliminary), by
A. Thomas Young. March 13, 1970.
37 p. NASA Viking Mission Definition No. 3, March 13, 1970

I-II Authors III Title IV NASA/Langley Viking Mission Definition

Contents: Science Requirements; scientific objectives; landing sites; lifetime; the use of two spacecraft, strategy for; mission definition schedule

Keywords: Viking; Mars; Langley Research Center; Mission Statement; report

PQ-13

National Aeronautics and Space Administration, Washington, D. C.
Viking '73 investigators. Dec. 18, 1969.
5 p. NASA News Release No: 69-166

I Author II Title III NASA News Release

Keywords: Viking; Mars; science; mission statement; NASA; news release

PQ-14

COSPAR, Panel on Planetary Quarantine.
Report of the panel on planetary quarantine. 1970.
COSPAR, Panel on Planetary Quarantine Meeting held in Leningrad on May 23, 1970

I Author II Title III COSPAR Meeting

Keywords: COSPAR; Contamination log; Leningrad; Meeting; N; P_g; minutes P_r; Jovian

PQ-16

Exotech Incorporated, Washington, D. C.
Implications of 1970 COSPAR recommendations on PQ requirements for Mars missions.
8 p. Exotech Incorporated, Washington, D. C., Summary Report June 10, 1970.
no. TRSR 70-42

I Author II Title III Summary Report IV NASA Contract no. NASw-2062

Keywords: Exotech; N; Mars; P(N); Post-COSPAR; report; PQ requirements

PQ-15

Exotech, Incorporated, Washington, D. C.
Re-evaluation of planetary quarantine constraints. 1970.
5 p., with appendix Exotech, Inc., Washington, D. C., Planetary Quarantine Constraints, (Re-evaluation of) Intended to Serve as Supporting Material for the Forthcoming Discussions at COSPAR in May, 1970

I Author II Title III Exotech, Inc., PQ Constraints

Keywords: Exotech; PQ constraints; Mars; Venus; P(N); N; Pre-COSPAR; report

PQ-17

Martin Marietta Corporation, Denver, Colorado, Denver Division.
Contract NAS1-9000, WBS 1.3, Planetary Quarantine Working Group (PQWG) agenda. Nov. 4, 1970.
1 p. Martin Marietta Corporation, Denver Division, Memorandum, from A. A. Rothstein, Manager Planetary Quarantine, Viking Project, to Viking Project Office-NASA/Langley, Nov. 4, 1970

I Author II Title III MMC Memorandum

Keywords: Martin Marietta Corporation; Viking; Agenda; Planetary Quarantine Working Group; Meeting; Pasadena

PQ-18

NASA/Ames Research Center, Moffett Field, California.
Pioneer F/G planetary quarantine plan. N.D.
13 p. NASA/Ames Research Center Document No. PC-204(Draft)

I Author II Title III NASA/Ames Document

Keywords: Ames; Pioneer F/G; Planetary Quarantine Plan; Jupiter

PQ-19

Roper, W. D.
Spacecraft polymeric material interactions during decontamination, sterilization and thermal vacuum exposures, by W. D. Roper. 1970. 1 p. The George Washington University-Biological Sciences Communication Project Abstract, from Jet Propulsion Lab., Pasadena, Calif., Technical Report, JPL TR-32-1491, June 15, 1970

I Author II Title III GWUBSCP Abstract.

Keywords: GWUBSCP; Spacecraft; Contamination; Thermal Vacuum; JPL

PQ-20

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.
Planetary quarantine provisions for unmanned planetary missions. April, 1969.
20 p. NASA Handbook NHB 8020.12

I Author II Title III NASA Handbook

Contents: Requirements, planetary quarantine constraints,decontamination, microbiology constraints; Documentation and Data Requirements, planetary quarantine specifications, pre-launch analysis,post-launch analysis;Management,project development plan review

Keywords: NASA; PQ Provisions; directive; report; policy

PQ-21

National Aeronautics and Space Administration, Washington, D. C.
Office of Space Science and Applications.
Planetary quarantine provisions for unmanned planetary missions (Rough Draft). Nov., 1968.
20 p., with 1 appendix NASA Handbook NHB 8020.12 (Rough Draft)

I Author II Title III NASA Handbook

Contents: Requirements, planning, PQ constraints, decontamination, microbiology constraints; Documentation, data requirements; Management

Keywords: NASA; PQ Provisions; directive; report; policy

PQ-22

Fox, D.
Joint planetary quarantine program/Viking '73 operating agreement for implementation of planetary quarantine requirements. Dec. 8, 1969.
Draft of VPO/PQO "Interface" Agreement, Received from D. Fox on January 19, 1970

I Author II Title III Draft

Keywords: Viking; Interface; Management; Agreement

PQ-23

NASA/Langley Research Center, Hampton, Virginia, Viking Project Office.
Viking project: Planetary quarantine provisions, by L. P. Daspit, Jr. Feb. 20, 1969.
27 pp. NASA Planetary Quarantine Provisions, Feb. 20, 1969.

I-II Authors III Title IV NASA PQ Provisions

Contents: Applicability; Conflicting Requirements, deviations; Requirements, planning, planetary quarantine constraints, decontamination, microbiology constraints, launch operations constraints; Documentation and Data Requirements, planning documents, pre-launch analysis, post-launch analysis of planetary contamination

Keywords: Viking; Planetary Quarantine Provisions; viking 75 Project; M75-127-1

PQ-24

NASA/Langley Research Center, Hampton, Virginia, Langley Station.
Viking lander system and project integration. March 1, 1969.
22 p., with 6 Figures NASA/Langley Statement of Work

I Author II Title III NASA/Langley Statement of Work

Contents: Project Objectives, description; Government-furnished Data, equipment, facilities, and support; Contractor Tasks; NASA participation

Keywords: Viking; Integration; Langley Research Center; Report; Lander; RFP

PQ-25 delete from collection

Exotech Incorporated, Washington, D. C., Systems Research Division.
Planning, evaluation, and analytical studies in planetary quarantine and spacecraft sterilization. Oct., 1969.
22 p. Exotech Incorporated, Washington, D. C., Systems Research Division, TPSR 70-23

I Author II Title III Unsolicited Proposal

Contents: Proposed Work Statement;(quarantine document system for Viking, design and operation of); Viking, quarantine assurance evaluation studies for; Personnel and Organization

Keywords: Exotech, proposal, studies, support

PQ-26

Martin Marietta Corporation, Denver, Colorado.
Martin Marietta Corporation proposal for Viking 1969. 1969.
25 p. Martin Marietta Corporation, Denver, Colorado - Proposal for Viking 1969, 1969

I Author II Title III MMC Proposal

Keywords: Martin Marietta Corporation; Proposal; Viking

PQ-27

Martin Marietta Corporation, Denver, Colorado.
Viking 73: Project planetary quarantine plan. Dec. 22, 1969.
92 p. Martin Marietta Corporation, Denver Division, Coordination Draft no. PL-3701009
I Author II Title III MMC Draft
Contents: Applicable documents; Organization and responsibilities; Program controls; Planetary quarantine documentation; PQ analysis; Real time data management; Viking facilities, services; New technology; PQ schedules

Keywords: Viking; Planetary Quarantine Plan; Draft; Langley Research Center; Mars; MMC

PQ-29

National Aeronautics and Space Administration, Washington, D. C., Planetary Quarantine Office.
Summary of comments compiled during review of January 14 of Coordination Draft PQ Plan as edited by D. Fox & Exotech. Jan. 22, 1969.
NASA/Washington, Planetary Quarantine Office, Summary of Coordination Draft PL 3701009 of the Viking 73 Project Planetary Quarantine Plan, Jan., 22, 1969

I Author II Title III NASA/Washington, Summary

Keywords: Planetary Quarantine Plan; Viking; Review; Comments; Memorandum; Exotech

PQ-30

National Aeronautics and Space Administration, Washington, D. C., Planetary Quarantine Office.
Summary of comments compiled during review of January 14 of Coordination Draft of PQ Plan (PL-3701009). Jan. 27, 1970.
NASA/Washington, Planetary Quarantine Office Summary of Coordination Draft of PQ Plan (PL-3701009), Jan. 27, 1970

I Author II Title III NASA/Washington, Summary

Keywords: PQ Plan; Viking; Review; Comments; Memorandum; revision; NASA

PQ-31

National Aeronautics and Space Administration, Washington, D. C.
Viking planetary quarantine plan. Feb. 24, 1970.
NASA Memorandum, from SB/Dr. Donald G. Fox.

I Author II Title III NASA Memorandum

Keywords: Memo; Viking; Planetary Quarantine Plan; Review; PQO; comments

PQ-32

NASA Headquarters, Washington, D. C., Office of Space Science and Applications, Planetary Quarantine Program.
Sterilization procedures for planetary landers, by Donald G. Fox, Ph.D. IN Bioscience "Capsule" (22):1-3, May 1970.

I-II Authors III Title IV Jn. cit.

Keywords: Report; Fox; Sterilization; Viking; thermal radiation; diffusion

PQ-33

NASA/Langley Research Center, Hampton, Virginia, Langley Station.
Planetary quarantine requirements for inclusion in the Viking project procurement package. Jan. 23, 1969.
NASA/Langley Research Center Memorandum from Viking Project Manager to NASA, Code SL, Attn: Mr. W. Jakobowski

I Author II Title III NASA/Langley Memorandum

Keywords: Viking; Requirements; Planetary Quarantine provisions; memo; LRC

PQ-34

Neill, Arthur H.
Report to the committee on space research of the International Council Of Scientific Unions on the probability of contamination of the planet Mars by the U. S. Mariner 1969 mission. April 8, 1969.
5 p. Draft of Report of the International Council Of Scientific Unions, April 8, 1969

I Author II Title III Draft

Keywords: COSPAR; post-launch; analysis; MM '69; NASA; draft; report

PQ-35

Martin, James S.
Viking planetary quarantine plan. Feb. 18, 1970.
2 p. Memorandum from James S. Martin, Viking Project Manager to NASA Headquarters, Code SL - Mr. W. Jakobowski, Viking Program Manager in Reference to NASA Hq. letter from W. Jakobowski to J. S. Martin, Jr. January 30, 1970 and MMC doc. PL-3701009, Dec. 22, 1969, PO-0022 "Coordination Draft - Viking '73 Project Planetary Quarantine Plan"

I Author II Title III Memorandum

Keywords: Memorandum; Viking; Planetary Quarantine Plan; Comments; Deviations; LRC; Martin

PQ-36

California Institute of Technology, Pasadena, California, Jet Propulsion Laboratory.
A Letter concerning the Mariner Mars 1971 Project budget. Sept. 29, 1970.
1 p. Letter from Dan Schneiderman, Manager Mariner Mars 1971 Project, to SL/Earl W. Glahn, MM 71 Program Manager, NASA

I Author II Title III Jet Propulsion Lab. Letter

Keywords: JPL; NHB 8020.12; MM '71; Mars; budget; letter; assay

PQ-37

National Aeronautics and Space Administration, Washington, D. C.
Clarification of NHB 8020.12, paragraph 2.2.4.3.1. Oct. 1, 1970.
1 p. NASA Memorandum, from SL/Manager, Mariner Mars '71, Planetary Programs to SB/Planetary Quarantine Officer, Bioscience Programs

I Author II Title III NASA Memorandum

Keywords: Memorandum; NHB 8020.12; MM '71; assay; NASA; approval

PQ-38

National Aeronautics and Space Administration, Washington, D. C.
Mariner Mars 1971 planetary quarantine plane - PD 610-18, dated 11 February 1070.
2 p. NASA Memorandum, from SB/Planetary Quarantine Officer, Bioscience Programs, to SL/Program Manager, Mariner Mars '71 Mission, Planetary Programs

I Author II Title III NASA Memorandum

Keywords: Memorandum; Approval; Mars; Planetary Quarantine Plan; comments; PQO; MM '71

PQ-39

California Institute of Technology, Pasadena, California, Jet Propulsion Laboratory.
Response to SB/Deputy Planetary Quarantine Officer's comments on preliminary microbiological assay and monitoring plan. June 18, 1970.
Memorandum on Assay & Monitoring Plan, from A. R. Hoffman/M. R. Christensen, to N. R. Haynes

I Author II Title III Jet Propulsion Lab. Memorandum

Keywords: JPL; MM '71; Mars; assay; plan; comments; efficiency factor; Memorandum

PQ-40

National Aeronautics and Space Administration, Washington, D. C.
Reallocation of P_c to Viking 1975. Aug. 12, 1970.
1 p. NASA Memorandum from Lawrence B. Hall, Planetary Quarantine Officer, to SL/Walter Jakobowski, Viking Program Manager

I Author II Title III NASA Memorandum

Keywords: Viking; Mars; Memorandum; N; P(N); PQO; allocation

PQ-41

National Aeronautics and Space Administration, Washington, D. C.
Reallocation of P_c to Mariner 1971. Aug. 12, 1970.
1 p. NASA Memorandum from SB/Lawrence B. Hall Planetary Quarantine Officer to SL/Earl Glahn, Mariner '71 Program Manager

I Author II Title III NASA Memorandum

Keywords: Mariner '71; Mars; Memorandum; N; P(N);allocation; PQO; approval

PQ-42

National Aeronautics and Space Administration, Washington, D. C.
Revision of the value of P_G for Mars. Aug. 12, 1970.
1 p. NASA Memorandum from SB/Lawrence B. Hall, Planetary Quarantine Officer to SL/Walter Jakobowski, Viking Program Manager

I Author II Title III NASA Memorandum

Keywords: P_G; Mars; Memorandum; Woods Hole; SSB; Viking; PQO; review; value; confidence; approval

PQ-43

Exotech Systems, Inc., Washington, D. C.
Viking meeting September 10 and 11, 1970 at Langley Research Center.
Sept. 14, 1970.
3 p. Exotech Systems, Inc., Washington, D. C., Memorandum from EJB to 053 File, Sept. 14, 1970

I Author II Title III Exotech Systems, Inc., Memorandum

Keywords: Viking, meeting; LaRC; MMC; Planetary Quarantine Requirements; Math Model; Sterilization; repairs

PQ-44

Neill, Arthur H.
Comments on preliminary microbiological assay and monitoring plan.
May 27, 1970.
2 p. Memorandum, from Arthur H. Neill, SB/Deputy Planetary Quarantine Officer, to SL/Program Manager, Mariner Mars '71, May 27, 1970

I Author II Title III Memorandum

Keywords: MM '71; Memorandum; Comments; Microbiological Assay and Monitoring Plan; estimation; # samples; Neill; PQO

PQ-45

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.
Biological sampling for Viking '73 N.D.
1 p. NASA/ Washington Memorandum from SB/Planetary Quarantine Officer to LaRC/Viking Project Manager

I Author II Title III NASA Memorandum

Keywords: Viking; microbiological assay; memorandum; sampling; # samples; agreement; PQO

PQ-46

Dr., Fox, Donald G.
Bi-weekly Viking planetary quarantine meeting. January 6, 1970.
1 p. Minutes of Bi-weekly Meeting, from Dr. Donald G. Fox to Memorandum For The Record, Jan. 6, 1970

I Author II Title III Minutes

Keywords: Viking; Meeting; Bi-weekly; Minutes; Fox; interface; correspondence

PQ-47

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.
Viking project plan. Aug. 28, 1970.
1 p. NASA/Washington Memorandum, from SB/Lawrence B. Hall - Planetary Quarantine Officer to SL/Walter Jakobowski - Viking Program Manager

I Author II Title III NASA Memorandum

Keywords: Viking; Planetary Quarantine Provisions; Comments; P(N); Memorandum; review; approval; PqO

PQ-48

PQAC recommendation XV: D-values. February, 1969.
3 p. PQAC Summary Report, February, 1969

I Title II PQAC Report

Keywords: D-values; PQAC; summary report; P_g; Sneath; error; action; N, recommendations; conservation; ETO; P(vt)

PQ-49

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.
Allocation of P_c to Pioneer F. Aug. 12, 1970.
1 p. NASA/ Washington Letter, from SB/Lawrence B. Hall, to SL/Gleen Reiff, Pioneer Program Manager

I Author II Title III NASA Letter

Keywords: Pioneer; P(N); T; N; Requirement; Jupiter; Memorandum; PQO; P(g); parameter; values;approval

PQ-50

Martin Marietta Corporation, Denver, Colorado, Denver Division.
Contract NAS1-9000 - Classification of questionable burden areas on the Viking lander. Aug. 20, 1970.
2 p. Martin Marietta Corp. Letter, from Frank W. McCabe to NASA/ Langley, Hampton, Virginia, including 1 Enclosure, Aug., 1970.

I Author II Title III MMC Letter

Keywords: Bioburden; MMC; letter; Mated; surface; definitions; VPO; FA cycle; parachute

PQ-51

California Institute of Technology, Pasadena, California, Jet Propulsion Laboratory.
August 20, 1970.
2 p. California Institute of Technology, Pasadena, California, Jet Propulsion Lab., Letter from W. E. Giberson, Mariner Venus/Mercury '73, Project Manager to Mr. N. W. Cunningham, Code SL/NASA/Washington, D. C., August 20, 1970

I Author II Letter

Keywords: Mercury; Venus; MVM '73; Letter; JPL; Planetary Quarantine Plan; Planetary Quarantine Requirements; relaxation; funds

PQ-52

Strobel, G. K.
Planetary quarantine plan for Venus-Mercury 73 mission. Sept. 15, 1970.
4 p. Memorandum, from G. K. Strobel, SL/Program Engineer, Mariner Venus-Mercury 73 Mission, to Chief, Planetary Quarantine/SB, Sept. 15, 1970.

I Author II Title III Memorandum

Keywords: MVM '73; Planetary Quarantine Plan; Planetary Quarantine requirements; Mercury; Venus; Memorandum; SL; request; relaxation

PQ-53

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.
Guidelines for preparation of implementation of Mariner Venus/Mercury '73 planetary quarantine plan. Oct. 16, 1970.
3 p. NASA/Washington, D. C., Office of Space Science and Applications Memorandum, from SB/Planetary Quarantine Officer to SL/Program Manager, Mariner Venus/Mercury '73, Oct. 16, 1970

I Author II Title III NASA Memorandum

Keywords: Memorandum; Mariner; Venus; Mercury; Planetary Quarantine Plan; guidelines; P(N); P_g; PQO; MVM '73

PQ-54

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.
Oct. 16, 1970.
3 p. NASA/Washington, D. C., Letter from Lawrence B. Hall to Dr. Wolf Vishniac, pertaining to Dr. Sneath's "Memorandum on Estimating Probability Parameters", presented to the 1970 COSPAR Panel on Planetary Quarantine

I Author II NASA Letter

Keywords: Letter; Vishniac; Sneath; Conservatism; P_g; error; Hall

PQ-55

The University of Rochester, Rochester, New York, Department of Biology.
August 17, 1970.
1 p. The University of Rochester, Rochester, N. Y., Dept. of Biology Letter, from Wolf Vishniac to Lawrence Hall pertaining to the definition of planetary contamination

I Author II Letter

Keywords: P_c; definition; letter; Vishniac; Antartic

PQ-56

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.
Aug. 27, 1970.
2 p. NASA/Washington, D. C., Office of Space Science and Applications Letter, from Lawrence B. Hall to Dr. Charles R. Phillips

I Author II NASA Letter

Keywords: Venus; P_g; letter; Hall; request; comments; experiments; clouds; aerosols

PQ-57

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.
Comments on Pioneer F/G planetary quarantine plan, undated Preliminary Draft PC-204.
2 p. NASA/Washington, D. C., Memorandum, from SB/Lawrence B. Hall to SL/Glen Reiff, Aug. 12, 1970 Aug. 12, 1970.

I Author II Title III NASA Memorandum

Keywords: Pioneer; Jupiter; Memorandum; Planetary Quarantine Plan; Comments; requirements; Hall

PQ-58

National Aeronautics and Space Administration, Washington, D. C.,
Office of Space Science and Applications.
July 31, 1970.
2 p. NASA/Washington, D. C., Office of Space Science and Applications
Letter from Lawrence B. Hall to Dr. Carl Sagan, July 31, 1970

I Author II NASA Letter

Keywords: Letter; Sagan; jupiter; pioneer; Hall; outer planets; requirements

PQ-59

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Memorandum on estimating probability parameters, by P. H. A. Sneath.
May 15, 1970.
6 p. COSPAR Panel on Planetary Quarantine, 1970 (Paper by P. H. A. Sneath)

I-II Authors III Title IV Paper

Keywords: Sneath; COSPAR; paper; estimation ; error

PQ-60

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.
June 23, 1970.
1 p. NASA/Washington, D. C., Office of Space Science and Applications Letter, from Lawrence B. Hall to Dean P. Kastel, June 23, 1970

I Author II NASA Letter

Keywords: SSB; Letter; N; P(N); Hall; outer planets; Jovian

PQ-61

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.
April 10, 1970.
2 p. NASA/Washington, D. C., Office of Space Science and Applications, Letter from Lawrence B. Hall to Dean P. Kastel, April 10, 1970.

I Author II NASA Letter

Keywords: SSB; Palo Alto; N; P(N); letter; Hall; allocation

PQ-62

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.
Further reduction of sterilization requirements. Jan. 8, 1969.
2 p. NASA/Washington, D. C., Office of Space Science and Applications Memorandum, from Lawrence B. Hall to SL/Director

I Author II Title III NASA Memorandum

Keywords: Memorandum; requirements; relaxation; Mars; buried; PQO; sterilization

PQ-63

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.
SB concurrence on Mariner Mars 1971 project development plan. July 22, 1969.
1 p. NASA/Washington, D. C., Office of Space Science and Applications, Memorandum, from Orr E. Reynolds, to Director/SL, July 22, 1969

I Author II Title III NASA Memorandum

Keywords: Mariner '71; Mars; Project Plan; Memorandum; approval; PQO

PQ-64

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.
Meeting of the Space Science Board Annual ad hoc review committee for COSPAR sterilization objectives for 1970. Nov. 25, 1969.
1 p. NASA/Washington, D. C., Office of Space Science and Applications, Memorandum from L. B. Hall to SL/Director, Planetary Programs

I Author II Title III NASA Memorandum

Keywords: SSB; Palo Alto; Memorandum; agenda; meeting; PQO

PQ-65

Exotech Systems, Inc., Washington, D. C.
Viking meeting September 10 and 11, 1970 at Langley Research Center. September 14, 1970.
3 p. Exotech Systems, Inc., Washington, D. C., Memorandum from E. J. Bacon to 053 File, Sept. 14, 1970

I Author II Title III Memorandum

Keywords: Viking; Langley Research Center; Planetary Quarantine Requirements; Model; Sterile repair; MMC; Bioburden model; Sterilization model; memo; Bacon; meeting; minutes

PQ-66

Stanford University School of Medicine, Stanford, California, Stanford University Medical Center, Dept. of Community and Preventive Medicine.
Comments on Sneath's memorandum on estimating probability parameters by Byron Wm. Brown, Jr. August 20, 1970.
3 p. with Enclosure Stanford University School of Medicine, Stanford, California, Stanford University Medical Center, Dept. of Community and Preventive Medicine, Comments on Sneath's Memorandum, by Byron Wm. Brown, Jr., Aug. 18, 1970

I-II Authors III Title IV Comments

Keywords: Brown; Sneath; Bayesian statistics; parameter estimation; COSPAR; evaluation; comments; safety factors; confidence

PQ-67

U. S. Dept. of The Army, Washington, D. C., U. S. Army Medical Research and Development Command.
September 10, 1970.
1 p. U. S. Army Medical Research and Development Command, Washington, D. C., Letter from Kenneth R. Dirks, M.D., Colonel, MC Commanding to Lawrence Hall, September 10, 1970

I Author II Letter (USAMRDC)

Keywords: USAMRDC; Briefing; AD Little; Hospital; Sterilization; Aug. 11, 1970; Letter; appreciation

PQ-68

Martin Marietta Corporation, Denver, Colorado, Denver Division.
Minutes of planetary quarantine working group meeting, Viking project, contract NAS1-9000. March 24, 1970.
3 p. Martin Marietta Corporation, Denver Division, Minutes of PQWG Meeting, held March 18, 1970 at MMC.

I Author II Title III Minutes IV Contract no. NAS1-9000

Keywords: Martin Marietta Corporation; Planetary Quarantine Working Group; Viking; Meeting; Minutes; assay

PQ-69

Sandia Laboratories, Albuquerque, New Mexico.
Feasibility of thermoradiation sterilization of spacecraft using Cobalt 60, by R. M. Jefferson. May, 1970.
35 p. The George Washington University, Biological Sciences Communication Project Abstract on Sandia Laboratories Research Report # SC-RR-70-301, May 1970

I-II Authors III Title IV Abstract

Keywords: GWUBSCP, abstract; radiation; sterilization; Sandia, report

PQ-70

Exotech Systems, Inc., Washington, D. C.
Summary report: Implications of change in probability of microbial growth for Mars (July 1970 SSB Meeting). Sept., 1970.
5 p. Exotech Systems, Inc., Washington, D. C., Summary Report no. TR 71-04

I Author II Title III Exotech Systems, Inc. Report IV NASA Contract no. NASw-2062

Keywords: Report; Exotech; P_g; SSB; Woods Hole; Mars; implications

PQ-71

Exotech Systems, Inc., Washington, D. C.
Revised PQ requirements for Pioneer F/G. July 31, 1970.
2 p. Exotech Systems, Inc., Washington, D. C., Memorandum, from E. Bacon to L. Hall, via S. Schalkowsky, July 31, 1970

I Author II Title III Exotech Systems, Inc., Memorandum

Keywords: Pioneer; P_g; P(N); Quarantine Period; Jupiter; Bacon; memo; requirements

PQ-72

National Aeronautics and Space Administration, Washington, D.C.
July 28, 1970.
1 p. NASA Letterfrom Lawrence B. Hall, Planetary Quarantine Officer to Dr. Wolf Vishniac, University of Rochester, Dept. of Biology, July 28, 1970

I Author II NASA Letter

Keywords: SSB; P_c; Definition of terms; Vishniac; Woods Hole; COSPAR; letter; Hall

PQ-73

Martin Marietta Corporation, Denver, Colorado, Denver Division.
Report on the Viking '75 bioburden model, by Bruch A. Nelson. June 15, 1970.
36 p. Martin Marietta Corporation, Denver Division, DRL Control No. B-5-0003, Preliminary Report

I-II Authors III Title IV MMC Report V NASA Contract no. NAS1-9000

Contents: Bio Burden Model; Burden Estimation from Assays - The Sampling Model, description of, verification of; Burden Prediction - The Prediction Model; Sampling Strategy; Applicable Documents

Keywords: Viking; Bio Burden; model; estimation; prediction; Martin Marietta; Control Dwg. ; report; Nelson

PQ-75

Jet Propulsion Laboratory, Pasadena, California.
Minutes of planetary quarantine meeting at JPL on 6-7 May 1970, by A. A. Rothstein and Richard H. Green. N.D.
2 p. Jet Propulsion Laboratory Minutes, May 1970, Enclosure No. 5

I-III Authors IV Title V Minutes (JPL)

Keywords: Viking; Planetary Quarantine Working Group; Meeting; Minutes; allocation

PQ-76

Jet Propulsion Laboratory, Pasadena, California.
Planetary Quarantine Working Group meeting of July 16-17, 1970, by A. A. Rothstein, R. H. Green, and L. P. Daspit, Jr. N.D.
4 p. Jet Propulsion Lab., PQWG Minutes, July 1970

I-IV Authors V Title VI Minutes (JPL)

Keywords: PQWG; Meeting; Minutes; Models; Viking

PQ-77

Martin Marietta Corporation, Denver, Colorado, Denver Division.
Invitation of Viking 73 planetary quarantine working group meeting.
Dec. 30, 1969.
1 p. Martin Marietta Corporation, Denver Division Letter from A. A. Rothstein, Manager Planetary Quarantine to NASA Headquarters, Planetary Quarantine Office(Mr. L. B. Hall)

I Author II Title III MMC Letter

Keywords: Martin Marietta Corporation; Planetary Quarantine Working Group; Meeting; Agneda; Viking; minutes

PQ-78

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Review: Viking planetary quarantine plans. Dec. 5, 1969.
3 p. American Institute of Biological Sciences, Washington, D. C., Memorandum from Mary Frances Thompson-Coordinator, Special Science Projects to Viking Consultants, Dec. 5, 1969

I Author II Title III AIBS Memorandum

Keywords: AIBS; Planetary Quarantine Plan; Review Schedule; (Viking) memo

PQ-79

Exotech Systems, Inc., Washington, D. C.
July 22, 1970.
2 p. Exotech Systems, Inc., Washington, D. C., Letter from Lester D. Shubin, Senior Scientist, concerning Re: NASw-2062, July 22, 1970

I Author II Title III Exotech Systems, Inc., Letter

Keywords: Organic Inventory; Principal Investigators; Letter; Questionaire ; s Shubin; request

PQ-80

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COSPAR abstracts at Seattle meeting. March 5, 1971.
COSPAR, Panel on Planetary Quarantine, Abstracts at Seattle Meeting, March 5, 1971

I Author II Title III COSPAR Abstracts

Keywords: COSPAR; Memorandum; Seattle; Paper; Approval; presentation; Neill

PQ-81

Mitchell, R. T.
Errata to preliminary flight path analysis orbit determination and maneuver strategy Mariner Mars 1969. May 7, 1968.
5 p. Jet Propulsion Laboratory 605-58, PD-138, May 7, 1968 Paper from R. T. Mitchell to Distribution

I Author II Title III Paper

Keywords: Mariner Mars '69; Mars; Jet Propulsion Lab.; orbit; memo; revision; analysis

PQ-82

National Academy of Sciences-National Research Council, Washington, D. C., Space Science Board.
Review of sterilization parameter probability of growth (P_g). Sept. 17, 1970.
1. NAS-NRC, Washington, D. C., Space Science Board, Memorandum, (Concerning Review of Sterilization Parameter Probability of Growth (P_g), from D. P. Kastel, Secretary to Participants, Sterilization Parameter Review: Probability of Growth (P_g), Sept. 17, 1970

I Author II Title III NAS-NRC, Space Science Board, Memorandum

Keywords: Space Science Board; Meeting; Woods Hole; P_g; Conservatism minutes; Kastel; draft

PQ-83

National Aeronuatics and Space Administration, Washington, D. C., Office of Space Science and Applications.
Viking project document, M73-109-0. March 5, 1969.
1 p. NASA/Washington Viking Project Document Memorandum, from SB/Director to SL/Director, March 5, 1969

I Author II Title III Memorandum(NASA/Washington)

Keywords: Planetary Quarantine provisions;(Viking); Flight Project Document; Approval; memo; Reynolds

PQ-84

Martin Marietta Corporation, Denver, Colorado, Denver Division.
Contract NAS1-9000, Meeting of planetary quarantine working group.
March 5, 1970.
1 p. with 2 Enclosures Martin Marietta Corporation, Denver Division Minutes, March 5, 1970

I Author II Title III MMC Minutes

Keywords: Viking; MMC; meeting; PQWG; minutes

PQ-85

Exotech Systems, Inc., Washington, D. C.
Preliminary review of Viking '75 lander capsule sterilization plan, Martin Marietta Corp. Document no. PL-3701043 dated June 15, 1970. July 24, 1970.
3 p. Exotech Systems, Inc., Washington, D.C., Memorandum from S. Schalkowsky to Lawrence Hall, July 24, 1970

I Author II Title III EXI Memorandum

Keywords: Viking ; Sterilization Plan; Review; Comments; Memorandum; Overkill; Exotech

PQ-86

NASA/Ames Research Center, Moffett Field, California.
Pioneer program: Pioneer F/G planetary quarantine plan. Sept. 17, 1970.
10 p. with Figures NASA/Ames Pioneer F/G Program Document # PC-204

I Author II Title III NASA/Ames Document #

Keywords: Pioneer; Planetary Quarantine Plan; Jupiter; report; analysis; Ames; model

PQ-87

Exotech Systems, Inc., Washington, D. C.
Allocation of probability of contamination. December 3, 1970.
1 p. Exotech Systems, Inc., Washington, D. C., Memorandum, from E. J. Bacon to S. Schalkowsky, Dec. 3, 1970

I Author II Title III ESI Memorandum

Keywords: P(N); N; Mars; COSPAR; Viking; memo; Bacon; allocation; non-landers; landers

PQ-88

National Aeronautics and Space Administration, Washington, D. C.
Trajectory acceptance and planetary quarantine certification - Mariner 1969 Mars mission. N.D.
1 p. NASA/Washington Memorandum from Orr E. Reynolds, SB/Director of Bioscience Programs to S/Associate Administrator for Space Science and Applications

I Author II Title III NASA/Washington Memorandum

Keywords: Mariner '69; Mars; Memorandum; pre-launch analysis; approval; Reynolds; certification

PQ-89

National Aeronautics and Space Administration, Washington, D. C.
Planetary quarantine certification of Mariner 1969 mission. N.D.
1 p. NASA/Washington Memorandum from John E. Naugle, S/Associate Administrator for Space Science and Applications to A/Administrator

I Author II Title III NASA/Washington Memorandum

Keywords: Memorandum; Mariner '69; Mars; Naugle

PQ-90

Horowitz, N. H.
Planetary contamination I: The problem and the agreements, by N. H. Horowitz, R. P. Sharp and R. W. Davies.
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I-III Authors IV Title V Jn. Cit.

Keywords: publication; analysis; ZOND; Venus; Mars; bus deflection Horowitz; science; report; relaxation; history

PQ-91

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Planetary quarantine working group meeting of January 12-13, 1970 Langley Research Center/Viking Project Office.
6 p. Langley Research Center Minutes of Meeting(Planetary Quarantine Working Group), Jan. 12-13, 1970

I Author II Title III Minutes(LaRC)
PQWG
Keywords: Planetary Quarantine Working Group; Meeting; Minutes;Charter; Viking

PQ-92

Hagen, C. A.
Effect of ultraviolet on the survival of bacteria airborne in simulated martian dust clouds, by C. A. Hagen, E. J. Hawrylewicz, B. T. Anderson and M. L. Cephus. November 20, 1970.
1 p. George Washington University-Biological Sciences Communication Project Abstract, from Life Sciences and Space Research, Vol. VIII, Proc. of the Open Meeting of Working Group V at the 12th Plenary Meeting of COSPAR, Prague, 1969, p. 53-58

I-IV Authors V Title VI GWUBSCP Abstract

Keywords: GWUBSCP; abstract; ultraviolet = UV; sterilization; Mars; P(uv)

PQ-93

Reynolds, M. C.
Optimizing thermal and radiation effects for bacterial inactivation, by M. C. Reynolds and D. M. Garst. November 17, 1970.
1 p. George Washington University-Biological Sciences Communication Project Abstract, from Space Life Sciences 2(3), 1970 (in press)

I-II Authors III Title IV GWUBSCP Abstract

Keywords: thermal radiation; GWUBSCP; abstract; Sandia; radiation; sterilization

PQ-94

Pflug, I. J.
Dry heat destruction rates for micro-organisms on open surfaces, in mated surface areas and encapsulated in solids of spacecraft hardware. Nov. 20, 1970.
i p. George Washington University - Biological Sciences Communication Project Abstract, from Life Sciences and Space Research, Vol. VIII, Proc. of the Open Meeting of Working Group V at the 12th Plenary Meeting of COSPAR, Prague, 1969, p. 131-141

I Author II Title III GWUBSCP Abstract

Keywords: GWUBSCP; abstract; Minnesota; sterilization; D-value; Pflug; surface; mated; buried

PQ-95

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A study program on the development of mathematical model(s) for microbial burden prediction, by L. B. Farabee. Volume X, Final Report Addendum on Phase IX with Revisions to Volume VI User's Manual. Nov. 13, 1970.
1 p. George Washington University - Biological Sciences Communication Project Abstract, from MCR-68-97, Oct. 1970. 96 p.

I-II Authors III Title IV GWUBSCP Abstract

Keywords: GWUBSCP; abstract; bioburden; prediction; model; JPL; MMC

PQ-96

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Bactericidal activity of ethylene oxide and methyl bromide against microorganisms on various types of surfaces, by D. M. Portner, J. E. Sheimel, R. A. Urhin, R. K. Hoffman, H. M. Decker, and C. R. Phillips. May 22, 1970.
1 p. George Washington University-Biological Sciences Communication Project Abstract from Ft. Detrick's Prtoection Branch Report of Test No. 12-20, April 8, 1970

I-VII Authors VIII Title IX GWUBSCP Abstract

Keywords: GWUBSCP; abstract; ETO; sterilization; Detrick; Phillips; tests

PQ-97

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A study of aseptic maintenance by pressurization, by D. J. Cheater, R. J. Homsey, M. E. Long and J. F. Sontowski. May 22, 1970.
2 p. George Washington University - Biological Sciences Communication Project Abstract, from NASA CR-66908, April 1970

I-V Authors VI Title VII GWUBSCP Abstract

Keywords: GWUBSCP; abstract; General Electric; aseptic; maintenance; pressurization

PQ-98

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Ground simulation of a Mars-entry-capsule aeroshell environmental history, by R. G. Nagler. August 3, 1970.
1 p. George Washington University - Biological Sciences Communication Project Abstract, from JPL Technical Report JPL 32-1466, Feb. 15, 1970

I-II Authors III Title IV GWUBSCP Abstract

Keywords: JPL; Mars; entry; GWUBSCP; abstract; Jet Propulsion Laboratory; facility; atmosphere; simulation

PQ-99

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Quantitative and qualitative microbiological profiles of the Apollo 10 and 11 spacecraft, by J. R. Puleo, G. S. Oxborrow, N. D. Fields and H. E. Hall. November 2, 1970.
1 p. George Washington University - Biological Sciences Communication Project Abstract, from Applied Microbiology 20(3):384-389, September, 1970

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Keywords: Puleo; detection; GWUBSCP; bioburden; Apollo; Abstract

PQ-100

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A study of the effectiveness of thermoradiation sterilization, by M. C. Reynolds, K.F. Lindell and N. Laible. November 2, 1970.
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I-IV Authors V Title VI GWUBSCP Abstract

Keywords: GWUBSCP; thermoradiation; sterilization; Sandia; abstract

PQ-101

COSPAR, Panel on Planetary Quarantine.
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COSPAR, Panel on Planetary Quarantine, Report to the Consultative Group, Prague, May 17, 1969

I Author II Title III COSPAR, PQ Panel Report

Keywords: COSPAR; Planetary Quarantine Panel; N; Prague; Planetary Quarantine Requirements; SSB; meeting; minutes; T; deflection

PQ-102

COSPAR, Panel on Planetary Quarantine.
Interim Report of the Panel on planetary quarantine (Item 12), by Dr. Heden.
COSPAR, Interim Report of the Panel on Planetary Quarantine

I Author II Title III COSPAR Report

Keywords: COSPAR; Contamination log; Leningrad; Jovian; PQ Panel; P(g); meeting; minutes

PQ-103

National Aeronautics and Space Administration, Washington, D. C.
Clarification of NHB 8020.12, paragraph 2.2.4.3.1. Sept. 2, 1970.
2 p. NASA/Washington, Memorandum from SB/Planetary Quarantine Officer Lawrence B. Hall to SL/Program Manager, Mariner Mars 1971, Sept. 2, 1970

I Author II Title III NASA/Washington Memorandum

Keywords: NHB 8020.12; Memorandum; verification; MM '71; assay; sampling; PQO; clarification; order; scope; PHS

PQ-104

National Aeronautics and Space Administration, Washington, D. C.
A study of the probability of depositics viable organisms on Mars during the Mariner 1964 mission. November 3, 1964.
7 p. NASA/Washington Letter from Homer E. Newell, Associate Administrator for Space Science and Applications forwarding a NASA report to Professor Harry H. Hess, Chairman Space Science Board - National Academy of Sciences, Washington, D. C.

I Author II Title III NASA/Washington Letter-Report

Keywords: SSB; MM '64; pre-launch analysis; impact; Mars; Newell

PQ-105

National Aeronautics and Space Administration, Washington, D. C.
May 8, 1969.
2 p. NASA/Washington Letter, from John E. Naugle, Associate Administrator for Space Science and Applications to Dr. Harry H. Hess, Chairman, Space Science Board - National Academy of Sciences National Research Council , Washington, D. C.

I Author II Title III NASA/Washington Letter

Keywords: SSB; MM '69; Mars; post-launch analysis report; letter; transmittal

PQ-106

California Institute of Technology, Pasadena, California, Jet Propulsion Laboratory.
Mariner Venus 67 prelaunch analysis of contamination probability, by Norman R. Haynes. May 1, 1967.
23 p. Jet Propulsion Laboratory, Pasadena, California, JPL Project Document 123

I-II Authors III Title IV JPL Document

Contents: Mathematical Model; Contaminating Venus, probability of; Mission profile; accidental vehicle impact, probability of; spacecraft ejecta contaminating Venus, probability of

Keywords: MV '67; prelaunch analysis; Jet Propulsion Laboratory; report

PQ-107

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.
Status of the Planetary Quarantine programs. Jan. 6, 1969.
5 p. NASA/Washington Memorandum, from Orr E. Reynolds, Director, Bioscience Programs, Office of Space Science and Applications to Mr. George Derbyshire, Secretary-Space Science Board of the National Academy of Sciences, Washington, D. C., Jan., 1969

I Author II Title III NASA/Washington Memorandum

Keywords: B values; letter; status; SSB; P_c; P_g; letter; Reynolds; Derbyshire

PQ-108

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.
Further reduction of sterilization requirements. Jan. 6, 1969.
2 p. NASA/Washington, Memorandum from Lawrence B. Hall, Lunar and Planetary Quarantine Officer, Bioscience Programs, Office of Space Science and Applications to SL/Director, Jan., 1969

I Author II Title III NASA/Washington Memorandum

Keywords: Memorandum; SB; P_r; relaxation; Mars; environment; parameter value

PQ-109

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.
Planetary quarantine allocation for Mariner Mars '71 (MM '71) program. Jan. 15, 1969.
1 p. NASA/Washington Memorandum from Orr E. Reynolds, SB Director, Bioscience Programs, Office of Space Science and Applications to SL/ Director, Jan., 1969

I Author II Title III NASA/Washington Memorandum

Keywords: P(N); Mars; MM '71; Memorandum; SB; N; Viking; allocation; T; Reynolds; official

PQ-110

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications, Bioscience Programs.
Early preliminary Viking '73 schedule. Feb. 18, 1969.
1 p. NASA/Washington Memorandum, from SB/Donald G. Fox, Sterilit; Control Officer to SB/Lawrence B. Hall, Feb., 1969

I Author II Title III NASA/Washington Memorandum

Keywords: Viking; Memorandum; SB; Schedule; contractor; procurement; Fox

PQ-111

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.
Biological sampling for Viking '73. Feb. 8, 1969.
1 p. NASA/Washington Memorandum, from SB/Lawrence B. Hall, Planetary Quarantine Officer to LaRC/Viking Project Manager, Feb., 1969

I Author II Title III NASA/Washington Memorandum

Keywords: Sampling; Viking; Memorandum; SB; assay; agreement; LaRC

PQ-112

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.
Viking project document, M73-109-0. March 5, 1969.
1 p. NASA/Washington Memorandum, from Orr E. Reynolds, Director, Bioscience Programs, to SL/Director, March, 1969

I Author II Title III NASA/Washington Memorandum

Keywords: SB; Memorandum; Viking; Planetary Quarantine Provisions; Approval; Reynolds

PQ-113

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.
Sterile insertion in Viking missions. April 28, 1969.
1 p. NASA/Washington Memorandum, from Lawrence B. Hall SB/Planetary Quarantine Officer to SL/Viking Program Manager, April, 1969

I Author II Title III NASA/Washington Memorandum

Keywords: Memorandum; SB; Viking; MAST; sterile insertion; PQO; problem

PQ-114

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.
Concurrence on project plans. June 25, 1969.
1 p. NASA/Washington Memorandum, from SB/Director, Orr E. Reynolds to SL/Director, June, 1969

I Author II Title III NASA/Washington Memorandum

Keywords: Memorandum; SB; Project plans; approval; sign off; procedure; Reynolds

PQ-115

National Aeronautics and Space Administration, Washington, D. C.
Concurrence on project plans. July 7, 1969.
1 p. NASA/Washington Memorandum from Donald P. Hearth-SL/Director, Planetary Programs, to SB/Director, Bioscience Programs, July, 1969

I Author II Title III NASA/Washington Memorandum

Keywords: Memorandum; SL; Project Plans; Submittal; procedure; sign off

PQ-116

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.
Viking planetary quarantine activities. July 14, 1969.
1 p. NASA/Washington Memorandum from L. B. Hall/SB to W. Jakobowski/SL, July, 1969

I Author II Title III NASA/Washington Memorandum

Keywords: Viking; Memorandum; SB; Meeting; Schedule; coordination; agreement

PQ-117

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.
July 14, 1969.
1 p. NASA/Washington Letter, from Lawrence B. Hall, Planetary Quarantine Officer to Dr. W. H. Pickering, Director Jet Propulsion Lab., Pasadena, Calif., July, 1969

I Author II NASA/Washington, Letter

Keywords: Letter; SB; JPL; support; resident; request

PQ-118

National Aeronautics and Space Administration, Washington, D. C.
Viking planetary quarantine activities. July 16, 1969.
1 p. NASA/Washington Memorandum from Walter Jakobowski, SL/ Viking Program Manager, Planetary Programs to SB/L. Hall, July 16, 1969 (in reference: Memo from L. Hall to W. Jakobowski, same subject, dated July 14, 1969)

I Author II Title III NASA/Washington Memorandum

Keywords: Memorandum; SL; Viking; documents; meeting; LaRC; coordination; agreement; procedures

PQ-119

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.
July 17, 1969.
2 p. NASA/Washington Draft Letter from Lawrence B. Hall, Planetary Quarantine Chief, Bioscience Programs, to Dr. John Olive, American Institute of Biological Sciences, Washington, D. C., July, 1969

I Author II NASA/Washington Letter

Keywords: Letter; American Institute of Biological Sciences (AIBS); Viking; Support; Viking Quarantine Evaluation Board (VQEB); request; funds; support; Hall

PQ-120

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.
July 22, 1969.
1 p. NASA/Washington Letter from Donald G. Fox, Sterility Control Officer to Dr. Martin S. Favero, USPHS-NCDC, Phoenix Labs., Phoenix, Arizona, July 22, 1969

I Author II NASA/Washington Letter

Keywords: Letter; Favero; Viking; assay plan; scope; arrangements; Fox

PQ-121

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.
Planetary quarantine allocation for the planets. July 28, 1969.
2 p. NASA/Washington Memorandum from Planetary Quarantine Officer/SB Lawrence B. Hall to Director/SL, July 28, 1969

I Author II Title III NASA/Washington Memorandum

Keywords: Memorandum; P_c; P_g; SB; P(N); Mars; Venus; Jupiter; parameter values; SSB; official; approved

PQ-122

National Aeronautics and Space Administration, Washington, D. C.
Sterilization facility for Viking. July 28, 1969.
1 p. NASA/Washington Memorandum from Walter Jakobowski SL/Viking Program Manager, Planetary Programs to SPI/John W. Rosenberry, July 28, 1969

I Author II Title III NASA/Washington Memorandum

Keywords: Memorandum; SL; Viking; Sterilization; Facility; MAST; utilization; rejection

PQ-123

NASA/Langley Research Center, Hampton, Virginia, Langley Station.
Decision concerning use of "MAST" type sterilization facility for the Viking Project. July 18, 1969.
2 p. NASA/Langley Letter from James S. Martin, Jr., to NASA Code SL/ W. Jakobowski, July, 1969

I Author II Title III NASA/Langley Letter
LARC

Keywords: Letter; Viking; Langley Research Center; MAST; utilization; facility; sterile insertion; rejection

PQ-124

Jet Propulsion Laboratory, Pasadena, California.
U.S.P.H.S.'s (N.C.D.C., Phoenix) Involvement in the Apollo Program vs inception of bioassay activity of the Viking project. July 31, 1969.
2 p. JPL/Pasadena, California Memorandum 2945N-101, July, 1969, from E. J. Sherry to L. B. Hall

I Author II Title III JPL Memorandum

Keywords: Memorandum; Phoenix; Assay; Viking; workload; schedule; JPL; assignment; scope

PQ-125

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.
Sterilization facility for Viking. Aug. 19, 1969.
1 p. NASA/Washington Memorandum, Aug., 1969, from Planetary Quarantine Officer/SB Lawrence B. Hall to Viking Program Manager/SL

I Author II Title III NASA/Washington Memorandum

Keywords: Memorandum; SB; Viking; Sterilization; Facility; MAST; sterile insertion; requirement; clarification

PQ-126

National Aeronatuics and Space Administration, Washington, D. C., Office of Space Science and Applications.
July 31, 1969.
1 p. NASA/Washington, Memorandum from SB/Planetary Quarantine Officer to SL/Viking Program Manager, July, 1969

I Author II NASA/Washington, Memorandum

Keywords: Memorandum; SB; Viking; Sterilization; facility; MAST; clarification; procedures; agreement; sterile insertion

PQ-127

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.
Nov. 24, 1969.
2 p. NASA/Washington Letter from Donald G. Fox, Ph.D., Planetary Quarantine Program Officer to Mr. Sam Schalkowsky, Exotech, Inc., Washington, D. C., Nov., 1969

I Author II NASA/Washington Letter

Keywords: Letter; Fox; Viking; meeting; bioburden; model; agenda; assay; sampling; procedure

PQ-128

National Aeronautics and Space Administration, Washington, D. C.
JPL-Martin Co. bioburden math model. Dec., 1969.
1 p. NASA/Washington Planetary Quarantine, Preliminary Agenda held at NASA Headquarters, Washington, D. C., Room 219, Dec. 17-18, 1969

I Author II Title III NASA/Washington Preliminary Agenda

Keywords: Agenda; Viking; bioburden; meeting; model; assay; sampling; statistics

PQ-129

Jet Propulsion Laboratory, Pasadena, California.
August 8, 1969.
1 p. Jet Propulsion Lab., Pasadena, California Letter from W. H. Pickering, Director, to NASA/Washington-Mr. Lawrence B. Hall, Bioscience Programs-(SB) in reference: Letter to Dr. W. H. Pickering from Lawrence B. Hall, Dated July 14, 1969, Subject: JPL Resident

I Author II JPL/Pasadena Letter

Keywords: letter; Jet Propulsion Laboratory; resident; support; Pickering; agreement

PQ-130

Exotech Inc., Washington, D. C.
Comments on draft of Mariner Mars '71 PQ plan PD 610-18. March 6, 1970.
3 p. Exotech Inc., Washington, D. C., Memorandum to A. Neill, March 6, 1970

I Author II Title III Exotech Inc., Memorandum

Keywords: Memorandum; Exotech; MM '71; PQ plan; comments; review

PQ-131

Exotech Inc., Washington, D. C.
Additional comments on draft of Mariner Mars '71 PQ plan PD 610-18.
March 12, 1970.
1 p. Exotech Inc., Washington, D. C., Memorandum from E. Bacon to A. Neill, March 12, 1970

I Author II Title III Exotech Inc., Memorandum

Keywords: Memorandum; Exotech; MM '71; PQ Plan; comments; review; burden; arrival Comments ;

PQ-132

Sandia Laboratories, Albuquerque, New Mexico.
January 27, 1969.
2 p. Sandia Laboratories, Albuquerque, New Mexico, Letter from H. D. Sivinski, to Dr. Don Fox, NASA Headquarters, Washington, D. C., January, 1969

I Author II Sandia Laboratories, Letter

Keywords: Viking; Sandia; Letter; assay; fracture; sensitivity; adsorption; vacuum probe

PQ-133

Exotech Incorporated, Washington, D. C.
Visit with Al Hoffman of JPL. March 10, 1970.
1 p. Exotech Incorporated, Washington, D. C., Interoffice Memorandum, from E. Bacon to SS, LS, PL, dated March 10, 1970

I Author II Title III Exotech Inc., Memorandum

Keywords: Memorandum; Exotech; MM '71; Pre-launch analysis; Hoffman; Meeting; micrometeoroid dislodgement

PQ-134

National Aeronautics and Space Administration, Washington, D. C., Planetary Quarantine Office.
Planetary quarantine office program objectives. N.D.
NASA/Washington, Planetary Quarantine Office Program Objectives

I Author II Title III NASA/Washington Program Objectives

Keywords: Atlanta; PQAC; Program Objectives

PQ-135

National Aeronautics and Space Administration, Washington, D. C.
Headquarters funded projects. N.D.
NASA Headquarters Funded Projects

I Author II Title III NASA Headquarters Funded Projects

Keywords: Atlanta; PQAC; Program Objectives; evaluation; review; tasks; contracts

PQ-136

NASA/Washington, D. C., Office of Space Science and Applications.
TASK: To participate in Viking design reviews. 1969.
2 p. NASA/Washington Task Description and Planning Sheet,
Referenced from NHB 8020.12 3.2(5), 1969

I Author II Title III NASA/Washington Task Description and Planning Sheet

Keywords: Viking, Task; Task descriptions; planning; Exotech; design review

PQ-137

NASA/Washington, D. C., Office of Space Science and Applications.
TASK: Perform surveillance microbiological assays of facilities and hardware.
NASA/Washington Task Description and Planning Sheet, Referenced from NHB 8020.12 Par 3.2(8)(1)

I Author II Title III NASA/Washington Task Description and Planning Sheet

Keywords: Viking, Task; Task descriptions; planning; assay; Exotech

PQ-138

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Microbiological aspects of ethylene oxide sterilization, by K. Kereluk, R. A. Gammon and R. S. Lloyd.
1 p. George Washington University, Biological Sciences Communication Project Abstract, from Applied Microbiology 19(1):146-151, Jan. 1970. March 19, 1970.

I-III Authors IV Title V GWUBSCP Abstract

Keywords: abstract; George Washington University-Biological Sciences Communication Project = GWBSCP; ETO; sterilization

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Microbiological aspects of ethylene oxide sterilization. II. Microbial resistance to ethylene oxide, by K. Kereluk, R. A. Gammon and R. S. Lloyd. March 19, 1970.
1 p. George Washington University-Biological Sciences Communication Project Abstract, from Applied Microbiology 19(2):152-156, Jan., 1970

I-III Authors IV Title V GWUBSCP Abstract

Keywords: abstract; George Washington University-Biological Sciences Communication Project; Ethylene Oxide = ETO

PQ-140

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Microbiological aspects of ethylene oxide sterilization. III. Effects of humidity and water activity on the sporicidal activity of ethylene oxide, by K. Kereluk, R. A. Gammon and R. S. Lloyd. March 20, 1970.
1 p. George Washington University-Biological Sciences Communication Project Abstract, from Applied Microbiology 19(1):157-162, Jan., 1970

I-III Authors IV Title V GWUBSCP Abstract

Keywords: abstract; George Washington University-Biological Sciences Communication Project; Ethylene Oxide; water activity; humidity; D value

PQ-141

Kereluk, K.
Microbiological aspects of ethylene oxide sterilization. IV. Influence of thickness of polyethylene film on the sporicidal activity of ethylene oxide, by K. Kereluk, R. A. Gammon and R. S. Lloyd. March 20, 1970. 1 p. George Washington Unviersity-Biological Sciences Communication Project Abstract, from Applied Microbiology 19(1):163-165, Jan., 1970

I-III Authors IV Title V GWUBSCP Abstract

Keywords: GWUBSCP; abstract; ethylene oxide; sterilization; humidity; lethality; water activity

PQ-142

Rueter, A.
Elimination of toxicity from polyvinyl trays after sterilization with ethylene oxide, by A. Rueter and J. B. Schleicher. March 20, 1970. 1 p. George Washington University-Biological Sciences Communication Project Abstract, from Applied Microbiology 18(6):1057-1059, Dec., 1969

I-II Authors III Title IV GWUBSCP Abstract

Keywords: abstract; GWUBSCP; sterilization; ethylene oxide; toxicity; compatibility; lethality

PQ-143

Petersen, N. J.
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1 p. George Washington University-Biological Sciences Communication Project Abstract, from Applied Microbiology 18(6):1002-1006, Dec., 1969

I-II Authors III Title IV GWUBSCP Abstract

Keywords: George Washington University-Biological Sciences Communication Project = GWUBSCP; abstract; sampling; vacuum probe; surface; Minnesota

PQ-144

Whitfield, W. J.
The vacuum probe sampler, by W. J. Whifield and M. E. Morris. March 5, 1970.
1 p. George Washington University-Biological Sciences Communication Project Abstract, from Contamination Control 9(2):10-15, Feb., 1970

I-II Authors III Title IV GWUBSCP Abstract

Keywords: George Washington University-Biological Sciences Communication Project; (GWUBSCP); abstract; Sandia; vacuum probe; sampling; surface

PQ-145

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An improved method of spacecraft sterilization. March 5, 1970.
1 p. George Washington University-Biological Sciences Communication Project Abstract, from Contamination C rol 9(2):20-22, Feb., 1970

I Title II GWUBSCP Abstract

Keywords: GWUBSCP; abstract; Sandia; sterilization; radiation; thermoradiation; synergism

PQ-146

U. S. Dept. of The Army, Frederick, Maryland, Headquarters, Fort Detrick.
Quarterly status report from 1 November 1969 to 1 February 1970 on NASA Contract R-35.
1 p. George Washington University-Biological Sciences Communication Project, Department of Medical and Public Affairs, Abstract

I Author II Title III GWUBSCP Abstract

Keywords: GWUBSCP; abstract; Detrick; sterilization; chemicals; progress report

PQ-147

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I Author II Title III GWUBSCP Abstract

Keywords: GWUBSCP; Abstract; contamination; control; handbook; NASA; Marshall; Sandia

PQ-148

NASA/Langley Research Center, Hampton, Virginia, Langley Station.
Viking '73 period of planetary quarantine. Oct. 29, 1969.
1 p. NASA/Langley Memo. from James S. Martin, Jr./Viking Project Manager to NASA Code SB/Dr. D. G. Fox.

1 Author II Title III NASA/Langley Memorandum

Keywords: Memorandum; Viking; T; clarification; agreement; Martin (J.S.)

PQ-149

National Aeronautics and Space Administration, Washington, D. C.
Viking '73 period of planetary quarantine. Nov. 4, 1969.
1 p. NASA/Washington Memorandum from SB/Planetary Quarantine Officer, Lawrence B. Hall to SL/Viking Program Manager, Nov., 1969

I Author II Title III NASA/Washington Memorandum

Keywords: Viking; Memorandum; SB; T; N; clarification

PQ-150

Cornell University, Ithaca, New York, Center for Radiophysics and Space Research, Space Science Building.
August 18, 1970.
2 p. Cornell University, Ithaca, N. Y., Center for Radiophysics and Space Research, Letter from Mr. Carl Sagan, to Dr. Larry Hall, NASA, Office of Space Science and Applications, Washington, D. C., August 18, 1970

I Author II Cornell University, Letter

Keywords: Letter; Sagan; Jovian; Planetary Quarantine Requirements; Entry heating; Radiation; RTG

PQ-151

National Aeronautics and Space Administration, Washington, D. C.
Issuance of handbook - planetary quarantine provisions for unmanned planetary missions (proposed NHB 8020.12). April 9, 1969.
1 p. NASA/Washington Memorandum, from SL/Manager of Viking Program, Walter Jakobowski to SL/Director of Planetary Programs, Donald P. Hearth, April 9, 1969

I Author II Title III NASA/Washington Memorandum

Keywords: Memorandum; SL; Viking; Planetary Quarantine Provisions; review; comments

PQ-152

The George Washington University Medical Center, Washington, D. C.
Biological Sciences Communication Project.
May 17, 1971.
2 p. Biological Sciences Communication Project, Letter, from Frank D. Bradley, Senior Staff Scientist, to Dr. Vishwanath More, Asst. Professor in Political Science and Law, Johnston College, University of Redlands, May 17, 1971

I Author II Series note

Keywords: George Washington University; Letter; More; International Law; Back Contamination

PQ-153

National Aeronautics and Space Administration, Washington, D. C.
Viking planetary quarantine plan. March 3, 1970.
1 p. NASA/Washington Memorandum from SL/Viking Program Manager, Planetary Programs-Walter Jakobowski to SB/Planetary Quarantine Officer-Bioscience Programs, March 1970

I Author II Title III NASA/Washington Memorandum

Keywords: Memorandum; SL; Viking; PQ plan; submittal; deviations

PQ-154

National Aeronautics and Space Administration, Washington, D. C.
Review of Viking project plan. September 8, 1969.
1 p. NASA/Washington Memorandum from SB/Planetary Quarantine Officer, Lawrence B. Hall to SL/Viking Program Manager, September, 1969

I Author II Title III NASA/Washington Memorandum

Keywords: Viking; memorandum; Project plan; review; comments; PQO; clean room; assay; amendment

PQ-155

Exotech Incorporated, Washington, D. C.
Notes on thermal radiation sterilization meeting. April 23, 1970.
3 p. Exotech Incorporated, Washington, D. C., Memorandum, from E. Bacon to 053 File (LS), April 23, 1970

I Author II Title III Exotech Memorandum

Keywords: memorandum; Exotech; meeting; Sandia; Sterilization; radiation; thermoradiation; status; report; minutes

PQ-156

Instruments: MS/GC unit slated for 1973 Mars landing. (News of the $27-Billion Research Industry).
IN Industrial Research: 41, May, 1970

I Title II Jn. Cit.

Keywords: Viking; Mars; Science; MSGC; news release; publication; characteristics

PQ-157

Exotech Incorporated, Washington, D. C., Systems Research Division.
Estimation of microbial release probabilities from a Martian lander, by Samuel Schalkowsky and Paul S. Levy. N.D.
9 p., with 6 figures Exotech Incorporated, Washington, D. C., Systems Research Division, Report (Prepared for presentation at the May 1970 meeting of the COSPAR Panel on Planetary Quarantine)

I-III Authors IV Title V Exotech Inc. Report VI NASA Contract # NASW-2062

Keywords: Exotech; Report; P(r); Mars; COSPAR; Leningrad; Schalkowsky; Levy

PQ-158

Angelotti, R.
Review of the JPL-Martin report on a microbial burden prediction model, submitted by R. Angelotti, J. Bearman, M. Favero, I. Pflug, S. Schalkowsky, J. Sivinski and B. Rrown, (Chariman).
15 p. Review Committee Report Submitted for the Use of the Planetary Quarantine Advisory Committee (PQAC)

I-VII Authors VIII Title IX Review Committee Report

Keywords: Report; Review; bioburden; model; estimation; prediction; JPL; Angelotti

PQ-159

Exotech Systems, Inc., Washington, D. C.
Planetary quarantine requirements for Mariner Venus/Mercury '73 and comments on waiver of planetary quarantine plan. Oct. 1, 1970. 3 p. Exotech Systems, Inc., Washington, D. C., Memorandum, to NASA/Headquarters, Planetary Quarantine Office, Code SB, Oct., 1970

I Author II Title III ESI Memorandum

Keywords: Mercury; Venus; Comments; Memorandum; PQ plan; MVM '73; Requirements; waiver; review; Exotech

PQ-160

Murray, Bruce C.
Planetary contamination II: Soviet and U. S. practices and policies, (Quarantine can be neither absolute nor unilateral; U.S. policy should acknowledge Soviet practice), by Bruce C. Murray, Merton E. Davies, and Phillip K. Eckman.
IN Science 155:1505-1511, March 24, 1967.

I-III Authors IV Title V Jn. Cit.

Keywords: Davies; Status; USSR; P(N); Mars; Venus; history; publication

PQ-161

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287 p. COSPAR Technique Manual Series, Manual No. 4, Nov., 1968

I Editor II Title III COSPAR Technique Manual Series

Keywords: COSPAR; sterilization; techniques; probability nomenclature

PQ-162

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Interface of the P.Q. program with the Viking '73 program, project and contractors. Oct. 9, 1969.
2 p. NASA/Washington Memorandum, from Planetary Quarantine Officer Lawrence B. Hall to Planetary Quarantine Staff and Supporting Personnel

I Author II Title III NASA/Washington Memorandum

Keywords: Viking; memorandum; interface;agreements

PQ-163

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.
Deviation from NHB 8020.12. March 12, 1970.
2 p. NASA/Washington, Office of Space Science and Applications, Memorandum, from SB/Planetary Quarantine Officer-Bioscience Programs Lawrence B. Hall to SL/Viking Program Manager-Planetary Programs, March 12, 1970

I Author II Title III NASA/Washington Memorandum

Keywords: deviation; Viking; memorandum; approval

PQ-164

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Additional items for discussion at August P.Q.A.C. meeting. July 15, 1970.
2 p. NASA/Washington, Office of Space Science and Applications, Memorandum from SB/Planetary Quarantine Program Officer Lawrence B. Hall to Planetary Quarantine Advisory Committee Chairman and Members, July 15, 1970

I Author II Title III NASA/Washington Memorandum

Keywords: PQAC; memorandum; Atlanta; agenda

PQ-165

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.
Alternate sterilization procedures. July 30, 1970.
1 p. NASA/Washington, Office of Space Science and Applications Memorandum from SB/Planetary Quarantine Officer-Bioscience Programs Lawrence B. Hall, to SL/Viking Program Manager-Planetary Programs, July 30, 1970

I Author II Title III NASA/Washington Memorandum

Keywords: memorandum; Viking; sterilization; alternative

PQ-166

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March 13, 1970
Carl -Coran Heden, Letter of March 13, 1970, to the Members of the Panel on Planetary Quarantine

I Author II Letter

Keywords: Letter; Heden; COSPAR; Planetary Quarantine Panel; P_g; P_r; Contamination log

PQ-167

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.
Jan. 6, 1969.
5 p. National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications, Letter, from Orr E. Reynolds, Director-Bioscience Programs to Mr. George Derbyshire, Secretary-Space Science Board of the National Academy of Sciences, Washington, D. C., Jan. 6, 1969

I Author II NASA/Washington Letter

Keywords: SSB; letter; Pr; D-values; status; Pg

PQ-168

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.
August 20, 1969.
2 p. NASA/Washington, Office of Space Science and Applications Letter, from Lawrence B. Hall, Planetary Quarantine Officer-Bioscience Programs, to Mr. George Derbyshire, Space Science Board-National Academy of Sciences, Washington, D. C., August 20, 1969

I Author II NASA/Washington Letter

Keywords: SSB; P(N); letter; Prague; Cospar

PQ-169

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December 4, 1969.
4 p. NASA/Washington Letter from Lawrence B. Hall, Planetary Quarantine Officer, to Mr. George Derbyshire, Space Sciences Board of the National Academy of Sciences, Washington, D. C., Dec. 4, 1969

I Author II NASA/Washington Letter

Keywords: SSB; letter; PQ status; Pg; T=period; N

PQ-170

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.
March 24, 1970.
2 p. NASA/Washington Letter from Lawrence B. Hall, Planetary Quarantine Officer-Bioscience Programs to Mr. George Derbyshire, Executive Secretary, Space Science Board of the National Academy of Sciences, Washington, D. C., March 24, 1970

I Author II NASA/Washington Letter

Keywords: Pg; SSB;Woods Hole; letter

PQ-171

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.
D values. Feb. 20, 1969.
1 p. NASA/Washington Memorandum from SB/Planetary Quarantine Officer, Lawrence B. Hall to SL/Viking Program Manager, Feb. 20, 1969

I Author II Title III NASA/Washington Memorandum

Keywords: Viking; D values; memorandum; requirements

PQ-172

Jet Propulsion Laboratory, Pasadena, California.
Microbial survival after simulated meteoroid impact, by R. L. Olson, Ph.D., R. H. Green, Ph.D., E. A. Gustan, and A. J. Pilgrim, Ph.D.
21 p. Paper presented at the "Society for Industrial Microbiology Meeting", August 1966

I-V Authors VI Title VII JPL Paper

Keywords: Test; micrometeroid; JPL; dislodgement; survival

PQ-173

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I Author II Title III AVCO Corp. Report IV NASA Contract No. NAS8-20682

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Keywords: AVCO; Mars; Lander; Facility; Test

PQ-174

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I Author II Title III AVCO Corp. Report IV NASA Contract No. NAS8-20682

Contents: Experimental Program, survivor studies, transport analysis, effects tests, witness techniques; Sterilization Certification Plan

Keywords: AVCO; Mars; Lander; Facility; Test

PQ-175

Martin Marietta Corporation, Denver, Colorado, Denver Division.
Viking lander system and project integration. Oct. 1969.
Martin Marietta Corporation Viewgraphs from Martin Marietta Presentaion on Viking Planetary Quarantine Program to NASA Headquarters on October 22, 1969

I Author II Title III MMC Viewgraphs

Keywords: Martin Marietta; Viking; Mars; VLC; PQ Program; Meeting

PQ-176

National Academy of Sciences-National Research Council, Washington, D. C., Space Science Board.
Review of sterilization parameter probability of growth (P_G). Dec. 14, 1970.
3 p. NAS-NRC, Space Science Board, Washington, D. C., Memorandum, from D. P. Kastel, Secretary to Members, Participants; ad hoc Review Group on "Review of Sterilization Parameter: Probability of Growth (P_g)", Dec. 14, 1970

I Author II Title III NAS-NRC/SSB Memorandum

Keywords: SSB; Woods Hole; P_g; Report; Mars; Conservatism

PQ-177

National Aeronautics and Space Administration, Washington, D. C.
Models of Mars atmosphere (1967), (NASA Space Vehicle Design Criteria [Environment]). May, 1968.
21 p. NASA Special Publication SP-8010

I Author II Title III NASA SP

Contents: State-Of-The-Art, Development of models, choice of parameters for models, surface pressure, composition and molecular mass, temperature, density, gravity; Criteria; References

Keywords: Mars; Atmosphere; Model; Density; Gravity; Composition

PQ-178

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1973 Viking voyage to Mars.
(Reprint from the November 1969 issue of Astronautics & Aeronautics: 30-59)

I Author II Title III Reprint

Keywords: Viking; Mars; Mission; objectives; Science

PQ-179

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Viking orbiter science briefing. Sept. 12, 1969.
NASA Viking Orbiter Science Briefing, September 12, 1969

I Author II Title III NASA/VO Briefing

Keywords: Viking; VO; Meeting; Science Package; JPL

PQ-180

NASA/Langley Research Center, Hampton, Virginia, Viking Project Office.
Mars engineering model, by William H. Michael, Jr., George P. Wood, and A. Thomas Young. Feb. 6, 1969.
128 p. NASA/Langley Viking Project # M73-106-0, Feb., 1969

I-IV Authors V Title VI NASA/Langley Viking Project

Contents: Interplanetary Environment; Magnetic Field; Near-Mars Environment (300 KM - 35,000 KM); Mars Environment; Orbital, Physical, and Astrodynamical Data

Keywords: Viking; Mars; Design Criteria; Engineering Model; LaRC

PQ-181

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Viking description presentation at Viking preproposal briefing. Sept. 12, 1969.
NASA/Langley Viking Project # M73-115-0, Sept., 1969

I Author II Title III NASA/Langley Viking Project

Contents: Preliminary Design Payload; Mission Description; Spacecraft Description; Environmental Considerations; Special Considerations; Schedule; Appendix, additional orbiter engineering constraints

Keywords: Viking Project Plan; Spacecraft design; mission description; Mars; LaRC

PQ-182

California Institute of Technology, Pasadena, California, Jet Propulsion Laboratory.
Capsule system advanced development sterilization program, by A. R. Hoffman, J. T. Wang, and M. R. Christensen. Oct. 15, 1969.
32 p. California Institute of Technology, Pasadena, California, Jet Propulsion Laboratory Technical Report # JPL Tech. Report 32-1320

I-IV Authors V Title VI JPL Tech. Report

Contents: Capsule Description; Assembly and Test: Sterilization Process Determination; Microbiological Monitoring; Sterilization Test Results; Conclusions; Recommendations for Future Programs

Keywords: JPL; CSAD; Sterilization; Assay; Sterilization Tests

PQ-183

Fox, D.
PQ requirements for planetary missions. August 20, 1970.
Sections A - E Paper by D. Fox, Aug. 20, 1970

I Author II Title III Paper

Keywords: Pg; Pc; period of biological interest; (Planets)

PQ-184

National Aeronautics and Space Administration, Moffett Field, California, Office of Advanced Research and Technology (OART), Mission Analysis Div.
Spacecraft component survivability during entry into the Martian atmosphere, by Byron L. Swenson. (Working Paper) March 31, 1969.
15 p., with tables & figures NASA/OART, Mission Analysis Div., Moffett Field, California Working Paper # MS-69-1, March, 1969

I-II Authors III Title IV NASA/OART Working Paper

Keywords: entry heating; Mars; survivability; Ames

PQ-185

The Boeing Company, Seattle, Washington.
Microbial release from solids after simulated hard landings, by S. J. Fraser, R. L. Olson, and R. H. Green. N.D.
9 p. The Boeing Company, Seattle, Washington, Abstract

I-IV Authors V Title VI The Boeing Company Abstract

Keywords: Boeing; Test; impact; f; g

PQ-186

The Boeing Company, Seattle, Washington, Aerospace Systems Division.
Release of microorganisms from solids after simulated hard landings, by R. L. Olson, Ph.D and S. J. Fraser. Jan. 26, 1970.
95 p. The Boeing Company, Aerospace Systems Division, Final Report, Jan. 26, 1970

I-III Authors IV Title V The Boeing Company Final Report

Contents: Test I; Test II; Test III

Keywords: Boeing; test; impact; f; g

PQ-187

Beckman Instruments, Inc., Fullerton, California, Advanced Technology Operations.
Project Viking planetary quarantine analysis program. June 9, 1969. 35 p., with 2 exhibits Beckman Instruments, Inc., Advanced Tech. Operations, Technical Proposal # Beckman CS 69-218, June 9, 1969

I Author II Title III Beckman Instruments, Inc., Tech. Proposal

Contents: Technical Management; Technical Approach; Resumes; Selected References

Keywords: Beckman; proposal; Viking; L

PQ-188

Beckman Instruments, Inc., Fullerton, California, Advanced Technology Operations.
Project Viking planetary quarantine analysis program. N.D. Beckman Instruments, Inc., Advanced Tech. Operations, Addendum #, Beckman CS 69-218 (Prepared to Accompany The Oral Presentation of June 26, 1969 to NASA/Langley)

I Author II Title III Beckman Instruments, Inc., Addendum

Contents: Answers to NASA Questions; Beckman Annual Report; ATO Brochure

Keywords: Beckman; proposal; Viking; Meeting; LaRC

PQ-189

NASA/Manned Spacecraft Center, Houston, Texas.
Apollo interior spacecraft sampling. Dec. 11, 1970.
2 p. NASA/Manned Spacecraft Center, Houston, Texas, Letter from Charles A. Berry, M.D./Director of Medical Research and Operations, to NASA Headquarters/Capt. Arthur H. Neill, SB, Dec. 11, 1970

I Author II Title III NASA/Manned Spacecraft Center, Houston, Texas, Letter

Keywords: bioburden; Houston; Species; Apollo; sampling

PQ-190

Jet Propulsion Laboratory, Pasadena, California.
Mariner Mars 1971 planetary quarantine plan (Preliminary), Part I, by A. R. Hoffman and R. J. Reichert. Feb. 11, 1970.
Jet Propulsion Laboratory, Pasadena, California Project Document # PD 610-18, Part I, Feb. 11, 1970

I-III Authors IV Title V JPL Project Document

Contents: Organization and Responsibilities; Probability of Contamination, Analysis Plan; Documentation; Data Treatment; Subcontractor PQ Requirements; Facilities; Schedules; New Technology

Keywords: Planetary Quarantine Plan; MM '71; Jet Propulsion Laboratory

PQ-191

Martin Marietta Corporation, Denver, Colorado, Denver Division.
Viking '75 project planetary quarantine plan. August 20, 1970.
6 Sections, with appendices, tables, & figures Martin Marietta Corporation, Denver Division Coordination Draft # PL-3701009, August 20, 1970

I Author II Title III MMC Coordination Draft IV NASA Contract no. NAS1-9000

Contents: Applicable Documents; Viking Project Integration;Viking Lander Capsule System; Viking Orbiter System

Keywords: PQ Plan; Viking '75; Martin Marietta Corporation

PQ-192

Exotech Systems, Inc., Washington, D. C.
Review of planetary quarantine parameter probability of growth (P_g), by Samuel Schalkowsky.
Exotech Systems, Inc., Washington, D. C., Paper presented by S. Schalkowsky at the Woods Hole Meeting, July, 1970

I-II Authors III Title IV Exotech Systems, Inc., Paper

Keywords: SSB; Woods Hole; Meeting; Minutes; P_g

PQ-193

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.
Revision of the value of P_G for Mars. Aug. 12, 1970.
1 p. NASA/Washington, Memorandum, from SB/Lawrence B. Hall, Planetary Quarantine Officer to SL/Earl Glahn, Mariner 1971 Program Manager, August 12, 1970

I Author II Title III NASA/Washington Memroandum

Keywords: Mariner '71; Mars; P_g; Memorandum; Woods Hole; SSB

PQ-194

COSPAR, Panel on Planetary Quarantine.
Sterilization and quarantine. 1967.
4 p. COSPAR, Panel on Planetary Quarantine, Report, 1967

I Author II Title III COSPAR Report

Keywords: COSPAR; report; D values

PQ-195

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37 p. NASA/Langley Research Center, Viking Project Office, Mission Definition No. 3, M75-123-0, March 13, 1970

I-II Authors III Title IV NASA/Langley Mission Definition

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Keywords: Viking; Project Plan; Langley Research Center; Science Package

PQ-196

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I Author II Title III NASA/Washington Memorandum

Keywords: Planetary Quarantine Officer; Comments; Mariner; Mars; 1971; Pre-launch Analysis

PQ-197

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I Author II Title III MMC, Denver Division Coordination-Copy

Keywords: Viking; DRL; Martin Marietta Corporation

PQ-198

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I Author II Title III MMC, Denver Division Coordination-Copy

Contents: Applicable Documents; Approach to Contamination Control; Major Sources of Organic Contamination and Methods of Control; Additional Sources of Organic Contamination and Methods of Control; Other Contamination Sources and Methods of Control

Keywords: Viking; Contamination Plan; DRL; Martin Marietta Corporation

PQ-199

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I Author II Title III AIBS, Planetary Quarantine Advisory Committee, Abstracts

Keywords: American Institute of Biological Sciences (AIBS); Seminar; Atlanta; Agenda

PQ-200

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I Author II Title III Exotech Systems, Inc., Memorandum

Keywords: Memorandum; Draft; Exotech; Comments; Mariner; Mars; 1971; Pre-launch Analysis

PQ-201

Martin Marietta Corporation, Denver, Colorado, Denver Division.
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I Author II Title III MMC Viking Analyses

Contents: Potential Contamination Events; JPL Analyses (MM71 and Viking); MMC Analyses; Summary

Keywords: MMC; Viking; PQ; Analysis; Model; Ent4y; Ejecta; Recontamination; View Graphs; Planetary Quarantine Working Group

PQ-202

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I Author II NASA/Washington, Letter

Keywords: Space Science Board; P_g; P_r; Mars; Planetary Quarantine Requirements

PQ-203

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Minutes of conservatism meeting. Feb. 11, 1971:
2 p. NASA/Washington Memorandum, from SB/Planetary Quarantine Officer--Viking, to Distribution List(concerning the meeting of L. Hall, D. Fox, L. Daspit, J. Stern, R. Green, S. Schalkowsky, A. Neill and E. Bacon at NASA on Jan. 12, 1971 to discuss Conservatism in the Application of PQ Requirements)

I Author II Title III NASA/Washington Memorandum

Keywords: Memorandum; SB; Viking; Minutes; Conservatism

PQ-204

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1 p. National Academy of Sciences-National Research Council, Space Science Board, Washington, D. C., Letter from Dean P. Kastel (concerning ad hoc Committee for Review of Sterilization Standards Summary Report), to Mr. Lawrence B. Hall, Planetary Quarantine Officer, Office of Space Science and Applications, NASA, Washington, D. C., April 7, 1970

I Author II NAS-NRS, Space Science Board Letter

Keywords: Space Science Board; P_g; Quarantine period; # missions; Mars; rate of consumption of $^{6}P_c$

PQ-205

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I-II Authors III Title IV JPL Report

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PQ-206

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I Author II Title III NASA Policy Directive

Keywords: Lunar; Biological; Organic; Contamination; Policy; Directive

PQ-207

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I Author II Title III NASA Policy Directive

Keywords: Biological; Contamination; Policy; Directive; NASA

PQ-208

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I Author II Title III AIBS, Planatary Quarantine Seminar Abstracts

Keywords: Planetary Quarantine Seminar; Abstracts; Williamsburg; American Institute of Biological Sciences

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I Author II Title III NASA Report

Keywords: COSPAR; Space Science Board; Post-launch; MM'64

PQ-210

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I Author II Title III NASA Report

Keywords: COSPAR; Space Science Board; Post-launch; VM'67

PQ-211

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I Author II Title III NASA Report

Keywords: COSPAR; Space Science Board; Post-launch; MM'69

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I Author II Title III GWUBSCP Abstract

Keywords: GWUBSCP; Venus; surface; atmosphere

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I-III Authors IV Title V GWUBSCP Abstract

Keywords: GWUBSCP; Horowitz; Bacteria; Growth; Freezing; Thawing

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I-II Authors III Title IV GWUBSCP Abstract

Keywords: GWUBSCP; contamination; models; estimation

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I Author II Title III GWUBSCP Abstract

Keywords: GWUBSCP; sampling; vacuum probe; Becton, Dickinson; NASA; Langley

PQ-216

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Planetary quarantine document development status. Jan. 4, 1971.
1 p. Martin Marietta Corporation, Denver, Colorado Planetary Quarantine Document Development Status - (132.01), Revision A, Jan. 4, 1971

I Author II Title III MMC Document Development Status (PQ)

Keywords: Viking; Martin Marietta Corporation; Document; Status

PQ-217

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I-III Authors IV Title V GWUBSCP Abstract

Keywords: Battelle; Report; Spacecraft; materials; nutrient; fungicide; Abstract

PQ-218

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Outbound planetary biological and organic contamination control: Policy and responsibility.
3 p. NASA Policy Directive # NPD 8020.10A

I Author II Title III NASA Policy Directive

Keywords: NPD 8020.10A; Policy Directive; Directive; NASA

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I Author II Title III Exotech Systems, Inc., Memorandum

Keywords: Memorandum; Comments; Exotech; Swenson; Survivability; Entry; Jovian

PQ-220

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I Author II Title III Exotech Systems, Inc., Memorandum

Keywords: Seattle; Memorandum; Exotech; Listing; Tasks; Semi-Annual Seminar

PQ-221

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Planetary Explorer/Venus mission. Section 7 - Planetary quarantine.
NASA/GSFC, Greenbelt, Maryland, Planetary Explorer/Venus Mission, Report, Section 7 - Planetary Quarantine

I Author II Title III NASA/GSFC Report

Contents: Requirements; Assessment; Procedures and Facilities; Documentation; Orbital Maneuvers; Contamination Danger

Keywords: Planetary Explorer; Analysis; Venus; Report; Goddard Space Flight Center (GSFC)

PQ-222

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3 p. Exotech Systems, Inc., Washington, D. C., Memorandum, to NASA, Code SL, March 11, 1971

I Author II Title III Exotech Systems, Inc., Memorandum

Keywords: Memorandum; Exotech; Planetary Explorer; Venus; Comments; Analysis

PQ-223

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I Author II Title III NASA/Washington, Memorandum

Keywords: Memorandum; SL; Planetary Explorer; Venus; Comments; Phase A

PQ-224

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2 p. Jet Propulsion Lab., Pasadena, Calif., Letter from Dan Schneiderman, Manager/Mariner Mars 1971 Project, to SL/Earl W. Glahn, MM 71 Program Manager, NASA/Washington, March 9, 1971 and Enclosure date March 4, 1971

I Author II JPL Letter and Enclosure

Keywords: Letter; JPL; MM '71; Pre-launch Analysis; Revision

PQ-225

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Pioneer program: Pioneer F/G planetary quarantine plan, Revision 1. Jan. 15, 1971.
7 p. NASA/Ames Research Center, Moffett Field, California, Document No. PC-204, Revision no. 1, Jan. 15, 1971

I Author II Title III NASA/Ames Document

Contents: Scope; Applicable Documents; Planetary Quarantine Requirements; Activities Plan; Contractor Planetary Quarantine Requirements; Documentation; Data Treatment

Keywords: Ames; Pioneer; Planetary Quarantine Plan; Jupiter

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Planetary quarantine analysis for an outer planets mission, by C. C. Gonzalez and W. Stavro. Feb., 1971.
1 p. Jet Propulsion Laboratory, Pasadena, California, Abstract, Feb., 1971

I-III Authors IV Title V JPL Abstract

Keywords: Jet Propulsion Lab.; Outer Planet Planetary Quarantine; Seattle; COSPAR; Abstract

PQ-227

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April 8, 1971.
1 p. Sandia Laboratories, Albuquerque, New Mexico, Letter from H. D. Sivinski, Manager, Planetary Quarantine Dept. to Lawrence B. Hall, Planetary Quarantine Officer, NASA Headquarters, April 8, 1971

I Author II Sandia Laboratories Letter

Keywords: Sandia; Letter; Seattle; Title; COSPAR; Ppaers

PQ-228

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April 7, 1971.
1 p. U. S. Dept. of Health, Education, and Welfare, Phoenix, Arizona, Applied Microbiology and Planetary Quarantine Section, Letter, from Martin S. Favero, Ph.D., Chief-Applied Microbiology and Planetary Quarantine Section, to L. B. Hall, Planetary Quarantine Officer, NASA/Washington, April 7, 1971

I Author II U. S. Dept. of Health, Education, and Welfare, Letter

Keywords: Favero; Letter; Phoenix; Seattle; COSPAR; Paper

PQ-229

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.
April 14, 1971.
1 p. NASA/Washington, Letter, from Lawrence B. Hall, Planetary Quarantine Officer to Dr. Wolf Vishniac, Dept. of Biology, University of Rochester, April 14, 1971

I Author II NASA/Washington Letter

Keywords: NASA; Hall; Letter; Seattle; Vishniac; COSPAR

PQ-230

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1 p. NASA/Washington, Memorandum, from Earl W. Glahn SL/Manager, Mariner Mars '71, to SL/Chief, Planetary Quarantine, April 15, 1971(with 2 attachments)

I Author II Title III NASA/Washington Memorandum

Keywords: Memorandum; NASA/SL; Mariner Mars '71; Revision A; Planetary Quarantine Plan

PQ-231

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Effects of aeolian erosion on microbial release from solids, by E. A. Gustan, D. M. Taylor and R. H. Green. Feb., 1971.
1 p. The Boeing Company, Seattle, Washington, Abstract, Feb., 1971

I-III Authors IV Title V The Boeing Co., Abstract

Keywords: JPL; COSPAR; Seattle; Abstract; D. M. Taylor; Erosion; Release

PQ-232

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1 p. Jet Propulsion Laboratory, Pasadena, California, Abstract, Feb., 1971

I-III Authors IV Title V JPL Abstract

Keywords: COSPAR; Seattle; Abstract; JPL; Mansour; Recontamination

PQ-233

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1 p. Jet Propulsion Laboratory, Pasadena, California, Abstract, Feb., 1971

I-VI Authors VII Title VIII JPL Abstract

Keywords: P_r; Jet Propulsion Laboratory; COSPAR; Seattle; Abstract; Taylor

PQ-234

Naugle, John E.
Dec. 24, 1970.
1 p. Naugle, John E., Letter from, to Mr. Charles H. Townes, Chairman, Space Science Board, National Academy of Sciences, Washington, D. C., Dec. 24, 1970

I Author II Letter from John E. Naugle

Keywords: NASA; Space Science Board; P_g; Letter; Woods Hole

PQ-235

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.
Review of Viking planetary quarantine plan. Sept. 1, 1970.
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I Author II Title III NASA/Washington Memorandum

Keywords: NASA/SL; Memorandum; Fox; Review; Viking; Planetary Quarantine Plan; Schedule

PQ-236

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I Author II U. S. Dept. of Health, Education, and Welfare, Letter

Keywords: Favero; Phoenix; Letter; Buried load; grinder

PQ-237

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March 31, 1971.
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I Author II NASA/Washington, Letter

Keywords: Letter; NASA/SB; Policy; Viking; Allocation; UV

PQ-238

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Martin Marietta Presentation on Space Recontamination of Viking and Lander Capsule following Bioshield Release, at Langley Research Center, 1971

I Author II Title III Martin Marietta Presentation

Keywords: Martin Marietta; Presentation; Recontamination; Viking; Bioshield Release; P_c; UV; Langley

PQ-239

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1 p. NASA/Washington, Memorandum, from SL/Planetary Quarantine Officer Lawrence B. Hall, to SL/Program Manager, Mariner Mars '71 and SL/Program Manager, Viking '75, Jan. 8, 1971

I Author II Title III NASA/Washington, Memorandum

Keywords: NASA/SL; Memorandum; P_G; Mars

PQ-241

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Outbound spacecraft: Basic policy relating to lunar and planetary contamination control. Sept. 6, 1967.
3 p. National Aeronautics and Space Administration, Washington, D.C., Policy Directive No. NPD 8020.7, Sept. 6, 1967

I Author II Title III NASA Policy Directive

Keywords: Biological; Contamination; Policy; Directive; National Aeronautics and Space Administration

PQ-242

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Estimation of encapsulated (buried) microbial burden, by Samuel Schalkowsky.
2 p. Paper presented at the AIBS Planetary Quarantine Committee Meeting, Denver, Colo., September 28, 1971.

I-II Authors III Title IV Citation

Denver; buried burden; Exotech; estimation; PQAP

PQ-243

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7 p. Progress Report, presented at the AIBS Planetary Quarantine Committee Meeting, Denver, Colo., September 28, 1971.

I-II Authors III Title IV Citation

Denver; PQAP; P_r; Exotech; Viking; Mars

PQ-244

Exotech Systems, Inc., Washington, D.C., Systems division.
Mariner Mars 1971 post launch analysis, dated August 16, 1971. Sept. 7, 1971.
1 p. Memorandum to Lawrence B. Hall, Chief, PQO/NASA from S. Schalkowsky.

I-II Authors III Title IV Memorandum

Memorandum; Exotech; Mariner Mars '71; post launch analysis; review

PQ-245

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Mariner Mars 1971 post-launch analysis of compliance with COSPAR recommendations, by Alan R. Hoffman and Ralph J. Reichert. Aug. 16, 1971.
20 p. includes figures and tables. JPL Report.

I-III Authors IV Title V Series note

Mariner Mars '71; post launch analysis; Jet Propulsion Lab; Mars

PQ-246

California Inst. of Technology, Pasadena, Calif. Jet propulsion lab.

a. Results of microbiological assay of MM71-2 (ESF Assay 1), by A. Hoffman. JPL Interoffice Memo. IOM 2945-2287, May 3, 1971.
b. Results of encapsulation microbiological assay of MM71-1, by A. Hoffman. JPL Interoffice Memo. IOM 2945-2288, May 7, 1971.
c. Results of reconfirmation microbiological assay of MM71-2 (ESF Assay 2), by A. Hoffman. JPL Interoffice Memo. IOM 2945-2290, May 18, 1971.
d. Revised spacecraft ejecta efflux estimates for Mariner 71-2, by A. Hoffman. JPL Interoffice Memo. IOM 2945-2291, May 18, 1971.

I-II Authors III-VI Titles VII-X Series notes

Mariner Mars '71; Jet Propulsion Lab.; analysis; memoranda; biological assay; efflux ejecta

PQ-247

Levinthal, Elliott

Viking '75 project mission design requirements, objectives and constraints, document no. IR-3720055, letter from E. Levinthal of Stanford University Medical Center, Dept. of Genetics to C.H. Robbins, NASA/Langley Research Center, May 21, 1971.
2 p.

I Author II Title IIISeries note

Quarantine period; orbit lifetime; Viking; Levinthal; letter

PQ-248

California Inst. of Technology, Pasadena, Calif. Jet propulsion lab.
Mariner Mars 1971 spacecraft contamination control plan, by M.R. Christensen.
33 p. Project Document PD 610-123, Aug. 24, 1970.

I-II Authors III Title IV Series note

Jet Propulsion Lab.; report; Mariner Mars '71; contamination control; cleaning

PQ-249

Martin Marietta, Denver, Colo. Denver division, Aerospace group.
Viking 75 project planetary quarantine documentation integration and control status.
6 Sections [PQ Milestone Document; PQ Document Tree; PQ DRL's; PQ DRD's; PQ Document Schedules; PQ Pert Net]. 1971

I Author II Title

Viking; MMC; report; documentation control; PQ schedule; milestones

PQ-250

Martin Marietta Corp., Denver, Colo. Denver div., Viking project.
Viking '75 Project planetary quarantine plan. Draft document.
6 Sections, 2 appendices; figures & tables. DRL Control no. PO-0022, report on contract no. NAS1-9000 to NASA/Langley Res. Center, Aug. 20, 1970.

I Author II Title III Series note IV Contract

PQ Plan; Viking; Langley; draft

Contents: I. Introduction; II. Applicable Documents; III. Viking Project Integration; IV. Viking Lander Capsule System; V. Viking Orbiter System; VI. Viking Launch Vehicle System, Appendix A. Planetary quarantine status (PQS) and directory (PQD) systems and Appendix B. Planetary quarantine plan glossary.

PQ-251

Martin Marietta Corp., Denver, Colo., Denver div., Viking project.
Viking lander bioburden tabulation.
1 parameter sheet. March 22, 1971.

I Author II Title

Viking; Langley; burden; prediction; buried; MMC; presentation

PQ-252

NASA, Washington, D.C. Office of space sci. & applications, Planetary programs. Letter to Dr. Hugh Odishaw, NAS-NRC, Space Science Board, by Lawrence B. Hall. 4 p. March 23, 1971.

I-II Authors III Title IV Subject-Developments of NASA PQ Program. V Series note

Space Science Board; letter; NASA/Hdqts.; PQ status; Odishaw

PQ-253

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I Title II Series note

General Electric; data; management; Viking; Langley

PQ-254

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Planetary quarantine requirements, by A.A. Rothstein.
23 p. [Charts and illustrations] n.d.

I-II Authors III Title IV (Period of Quarantine: 20 years, beginning Jan. 1, 1969)

MMC; Viking; presentation; Langley; PQ requirements; constraints; vu graphs

PQ-257

National Aeronautics & Space Admin., Washington, D.C. Office of Space Sci. & Applications, Biosci. programs. PQ program officer.
Comments on draft Viking planetary quarantine plan, by Lawrence B. Hall.
3 p. Memo. from L.B. Hall to Walter Jakoboski, Jan. 23, 1970.

I-II Authors III Title IV Series note

NASA/Hdqts.; PQ plan; Viking; comments; memorandum

PQ-258

National Aeronautics & Space Admin., Washington, D.C. Office of space sci. and applications, Biosci. programs, PQ program officer.
Viking sterilization plan, by Donald G. Fox.
1 p. Memorandum from D.G. Fox to Planetary Quarantine Advisory Committee Members, July 15, 1970.

I-II Authors III Title IV Series note

NASA/Hdqts; memo; Viking; sterilization plan; comments; PQAP

PQ-259

National Aeronautics & Space Admin., Washington, D.C. Office of Space sci. and applications. Planetary programs, Mariner Mars '71, manager.
Letter from Earl W. Glahn to Dan Schneiderman, May 27, 1970.
1 p. May 27, 1970

I-II Authors III Title IV JPL, Schneiderman)

NASA/Hdqts.; Mariner Mars '71; assay plan; approval; JPL; letter

PQ-260

National Aeronautics & Space Admin., Washington, D.C. Office of space sci. and applications. Biosci. programs, Deputy planetary quarantine officer.
Comments on preliminary microbiological assay and monitoring plan, by Arthur H. Neill.
2 p. Memorandum from Arthur H. Neill to Program Manager, Mariner Mars '71, May 27, 1970.

I-II Authors III Title IV Series note

NASA/Hdqts.; Mariner Mars '71; assay plan; comments; approval; memo.

PQ-261

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Letter from Dan Schneiderman to Earl W. Glahn, July 30, 1970.
1 p. Letter, July 30, 1970.

I-II Authors III Title

Jet Propulsion Lab.; Mariner Mars '71; assay; letter

PQ-262

National Aeronautics & Space Admin., Washington, D.C. Office of space sci. and applications. Biosci. programs, Deputy planetary quarantine officer.
Letter from Arthur H. Neill to CDC-Phoenix Labs, Attention: Dr. Favero, August 4, 1970.
1 p. Letter, August 4, 1970.

I-II Authors III Title IV Series note

NASA/Hdqts.; Mariner Mars '71; assay; letter

PQ-263

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Planetary quarantine parameters. n.d.
1 p. PQ Parameters for Planets.

I Author II Title III Series note

P_G; P_c; NASA/Hdqts.; status; Mars; Venus; Mercury; Jupiter; Saturn; parameters

PQ-264

National Aeronautics & Space Admin., Washington, D.C.
Planetary quarantine status for approved planetary missions, n.d.
1 p. List of mission plans, 1970.

I Author II Title III Series note

NASA/Hdqts.; PQ constraints; P_c; PQ plans; status; Viking; Mariner Mars; Pioneer; M-V-M

PQ-265

National Aeronautics and Space Admin., Washington, D.C. Planetary Quarantine Officer.
Minutes of conservatism meeting, Memorandum on...
2 p. Memorandum, Feb. 11, 1971.

I Author II Title III Memorandum

NASA/Headquarters; memo; conservatism = safety margins; meeting; Viking; buried load; P_r

PQ-266

National Aeronautics and Space Admin., Washington, D.C. Planetary Quarantine Office.
Major planetary quarantine program activities.
1 p. Agenda, [Dec. 1970]

I Author II Title III Series note

NASA/Headquarters; agenda; PQAP; Atlanta; Seattle; program planning

PQ-267

Exotech Systems, Inc., Washington, D.C. Systems division, Project manager.
Fifth quarterly progress report, contract NASw-2062, Planning, evaluation and analytical studies to implement planetary quarantine requirements, by E.J. Bacon.
5 p. Exotech 5th Quarterly Progress Report, Aug. 3, 1971.

I- II Authors III Title IV Series note

Exotech; quarterly report; progress

PQ-268

National Aeronautics and Space Admin., Washington, D.C. Planetary quarantine office.
Proposed meeting of Space Science Board ad hoc committee on COSPAR Sterilization Standards.
1 p. Agenda, [April 1971]

I Author II Title III Series note

NASA/Headquarters; program planning; SSB; agenda

PQ-269

California. Institute of Technology, Pasadena, Calif. Jet propulsion lab.
Preliminary analysis on the effect of planetary quarantine on Venus-Mercury 1973, by W. Stavro.
12 p. JPL Interoffice Memorandum No. 392.2-229, May 28, 1971.

I-II Authors III Title IV Series note

MVM; JPL; report; bias; Mercury; Venus; maneuver; impact; P(r); memo.

PQ-270

California. Institute of Technology, Pasadena, Calif., Jet propulsion lab.
Letter to L.B. Hall, from R.H. Green and V.C. Clarke, Jr. July 14, 1971.
2 p. Letter (JPL), July 14, 1971.

I-II Authors III Title IV Series note

Letter; MVM; P(r); Mercury; Venus; impact; JPL; Green; Clarke

PQ-271

Exotech Systems, Inc., Washington, D.C. Systems division.
Microbiological contamination log for planet Venus, by E.J. Bacon.
6 p. Exotech Report, (contract NASw-2062), 1971.

I-II Authors III Title IV Series note

Exotech; log; Venus; contamination

PQ-272

Exotech Systems, Inc., Washington, D.C. Systems division.
Microbiological contamination log for planet Mars., by E.J. Bacon.
3 p. Exotech Report, (contract NASw-2062), 1971.

I-II Authors III Title IV Series note

Exotech; log; Mars; contamination

PQ-273

National Aeronautics and Space Admin., Washington, D.C. Planetary quarantine officer.
Planetary quarantine policies - 1971, by L.B. Hall.
6 p. PQ Recommendations, Aug. 1971.

I-II Authors III Title IV Series note

NASA/Headquarters; Hall; SSB; policy; parameter values; P_G; Mercury; outer planets; deflection; T

PQ-274

Exotech Incorporated, Washington, D.C. Systems research division.
Implications of 1970 COSPAR recommendations on PQ requirements for Mars missions. Summary Report.
8 p. Exotech Tech Report TRSR 70-42, (contract NASw-2062), June 10, 1970.

I Author II Title III Series note

Exotech; report; N; COSPAR; Mars; P_g; T; P(n)

PQ-275

Exotech Incorporated, Washington, D.C. Systems research division.
Definition of probability of planetary contamination, Memorandum from E. Bacon to L.B. Hall. July 24, 1970.
1 p. Exotech Memorandum, July 24, 1970.

I-II Authors III Title IV Series note

Exotech; memo; P_c; definitions; COSPAR

PQ-276

Hall, Lawrence B.
Recent developments in planetary quarantine, by Lawrence B. Hall. 15 p. and abstract. Paper presented to COSPAR, London, 1967.

I Author II Title III Series note

Hall; report; PQ Program; policy; history; status; London; COSPAR

PQ-277

California. Institute of Technology, Pasadena, Calif. Jet propulsion lab.
Letter from D. Schneiderman to E.W. Glahn (MM 71 Program Manager, NASA) and Memorandum 2945-2225 on Response to NASA comments regarding the preliminary draft of MM'71 Pre-Launch analysis document, by A.R. Hoffman and R.J. Reichert. Letter - 2 p.; Memo 6 p. Letter dated March 9, 1971. JPL Interoffice Memo. # 2945-2225, March 4, 1971.

I-IV Authors V Title of Letter VI Title of Memo VII Series note

Letter; JPL Memo; JPL; MM '71; pre-launch analysis; revision; bio-burden; paramerer values; spacecraft efflux ejecta

PQ-278

National Aeronautics and Space Admin., Washington, D.C. Planetary quarantine office.
L.B. Hall presentation to Space Science Board, August 20, 1971.
9 VuGraphs

I-II Authors III Title

SSB; NASA/Headquarters; L.B. Hall; vu graphs; policy; Pioneer; USSR; Sagan; Mercury; presentation; parameters; values; model

PQ-279

Exotech Systems, Inc., Washington, D.C. Systems Division.
Sixth quarterly progress report, contract NASw-2062, Planning, evaluation and analytical studies to implement planetary quarantine requirements, by E.J. Bacon. Includes Draft Specification.
10 p. Exotech 6th Quarterly Progress Report, Oct. 19, 1971.

I-II Authors III Title IV Series note

Exotech; report; status; ETO; m_b; specification

PQ-280

Planetary Quarantine Advisory Panel action items/suggestions: June 1971.
4 p. PQAP Action Items/Suggestions (Seattle, Wash.), June 1971

I Title II Series Note

PQAP; Seattle; minutes; meeting; P(r); m_b; d-value; suggestions

PQ-283

National Aeronautics and Space Admin., Washington, D.C. Planetary quarantine officer.
Sign off on the Mariner Mars '71 post launch analysis, Memo from L.B. Hall.
1 p. Memorandum from L.B. Hall, Sept. 7, 1971.

I-II Authors III Title IV Series note

Hall; memo; MM'71; post launch analysis; PQO; approval

PQ-284

Hall, Lawrence B.
Potential cost of planetary quarantine. n.d.
1 p.

I Author II Title

report; NASA; cost; Viking; Jovian; Mars

PQ-285

Hall, Lawrence B.
Status of thermoradiation, n.d.
1 p.

I Author II Title

report; NASA; thermoradiation; sterilization; Sandia; Viking; cost

PQ-286

National Aeronautics and Space Admin., Washington, D.C. Office of space sci. and applications. Planetary programs.
Letter from L.B. Hall to Dr. Elliott C. Levinthal, Stanford University, Sept. 13, 1971.
2 p. Letter, Sept. 1971.

I-II Authors III Title

NASA; PQO; letter; Viking; bioshield; UV; P_g

PQ-287

Questions for PQAP, 9/21/71
1 p.

I Title

PQAP; agenda; KSC; P(r); parameter values; m_b

PQ-288

Exotech Systems, Inc., Washington, D.C. Systems division.
Documented definitions of planetary contamination, by E.J. Bacon
1 p. Memorandum to L. Hall, Oct. 19, 1971.

I-II Authors III Title IV Series note

Exotech; Bacon; memo; definition; P_c; Woods Hole

PQ-290

Exotech Systems, Inc., Washington, D.C. Systems division.
Memorandum from E.J. Bacon to Job 053 File on notes — NASA presentation, August 27, 1970.
2 p. Exotech IOM, 9/11/70.

I-II Authors III Title IV Series note

Exotech; Bacon; memo; presentation; P_g; Viking

PQ-292

(see revised PQ-11)
National Aeronautics and Space Admin., Washington, D.C. Office of space sci. & applicatior
Planetary programs.
Letter from L.B. Hall to E. Bacon on Viking document M75-127-1 revision.
1 p. Letter dated Oct. 20, 1971.

I-II Authors III Title IV Series note

NASA/Headquarters; Hall; Viking; document; review

PQ-293

National aeronautics and space administration, Washington, D.C. Office of space science
and applications.
Letter to Dr. Charles H. Townes, SSB, on planetary quarantine policies.
2 p. with attachment of PQ Policies, 1971. Aug. 12, 1971

I Author II Title III Series note

Letter; Naugle; SSB; policy; request; review; P(g); Mercury; outer planets;
bus deflection

PQ-294

National aeronautics and space administration, Washington, D.C. Office of space science and applications. Planetary quarantine officer.
Revised and new planetary quarantine policies, by Lawrence B. Hall.
1 p. Memorandum, Aug. 24, 1971.

I-II Authors III Title IV Series note

Hall; memo; policy; revision; authorization; SSB; official

PQ-295

National aeronautics and space administration, Washington, D.C. Office of space science and applications. Planetary quarantine officer.
Telecon with Mr. Dean Kaster — Space Science Board, by A.R. Hoffman.
2 p. Memorandum, Oct. 8, 1971.

I-II Authors III Title IV Series note

PQO; Hall; PQO; SSB; Hoffman; memo; policy; review; opinion; P(g); Mars; SAG; Goody

PQ-296

Ad hoc Committee (Outer Planet) for Science Advisory Group.
Quarantine considerations for outer planets missions, by R. Goody, N. Horowitz, A. Rich, and J. Lewis.
11 p. Committee Report, Nov. 1971.

I-II Authors III Title IV Series note

SAG; report; outer planets; PQ requirements; Jupiter; Saturn; Uranus; Neptune; penalty; Goody

PQ-297

Exotech Systems, Inc., Washington, D.C. Systems division.
Letter, review of the Viking PQ Provisions document M75-127-1, from E.J. Bacon to L.B. Hall, Nov. 12, 1971.
2 pp. Letter to LB Hall, PQO, Code SL
I-II Authors III Title IV Series note

Exotech; letter; comments; review; Viking; PQ provisions; Hall; Bacon

PQ-298

Exotech Systems, Inc., Washington, D.C. Systems division.
Microbial growth in simulated Martian environment, by E.J. Bacon.
1 page. Memorandum to 053 file, July 20, 1970.

I-II Authors III Title IV Series note

Bacon; Mars; memo; atmosphere; survival; P(uv); P(vt); test; experiment; data

PQ-299

Exotech Systems, Inc., Washington, D.C. Systems div.
Documented definitions of planetary contamination, by E.J. Bacon.
1 page. Memorandum from E.J. Bacon to L. Hall, NASA, Code SL, Oct. 19, 1971.

I-II Authors III Title IV Series note

Bacon; Exotech; memo; Hall; definitions; Woods Hole; P_c; contamination

PQ-300

Exotech Systems, Inc., Washington, D.C. Systems div.
Status review—PQ support project, by E.J. Bacon.
3 p. Memorandum to distribution on PQ., Nov. 2, 1971.

I-II Authors III Title IV Series note

Exotech; Bacon; memo; report; meeting; status; contract; minutes

PQ-301

Exotech Systems, Inc., Washington, D.C. Systems div.
Microbiological contamination log for planet Mars, December 31, 1971, by E.J. Bacon.
4 p. Report, (contract NASw-2062), Dec. 31, 1971.

I-II Authors III Title IV Series note

Bacon; report; log; Mars; contamination; COSPAR; Exotech

PQ-302

Exotech Systems, Inc., Washington, D.C. Systems div.
Microbiological contamination log for planet Venus, by E.J. Bacon.
6 p. Report (contract NASw-2062), Dec. 31, 1971.

I-II Authors III Title IV Series note

Bacon; Exotech; COSPAR; report; log; Venus; contamination

PQ-303

Exotech Systems, Inc., Washington, D.C. Systems div.
Letter from E.J. Bacon to L.B. Hall, Dec. 23, 1971.
1 p. Letter to L.B. Hall, NASA Code SL, Dec. 23, 1971.

I-II Authors III Title IV Series note

Exotech; Bacon; Hall; letter; P(sa); Pioneer; review; comments; evaluation

PQ-304

Exotech Systems, Inc., Washington, D.C. Systems div.
Estimation of planetary contamination probabilities by non-landing vehicles, by S. Schalkowsky.
10 p. Interim Report TR71-10, (contract NASw-2062), Dec. 1970.

I-II Authors; III Title IV Series note

Exotech; Schalkowsky; report; P_c; non-landing vehicles; probability of arrival; method; analysis

PQ-305

Exotech Incorporated, Washington, D.C. Systems research div.
Exotech review of Viking planetary quarantine plan, by E.J. Bacon.
2 p. Memorandum from E.J. Bacon to Exotech Staff, Jan. 7, 1970.

I-II Authors III Title IV Series note

Bacon; Exotech; memo; Viking; PQ plan; review; schedule; assignment

PQ-306

Exotech Systems, Inc., Washington, D.C. Systems div.
Preliminary review of the Pioneer F prelaunch analysis of probability of planetary contamination — NASA/Ames document No. PC-296, by S. Schalkowsky.
2 p. Memorandum from S. Schalkowsky to L.B. Hall, Chief, PQO, July 30, 1971.

I-II Authors III Title IV Series note

Schalkowsky; Exotech; memo ; Pioneer; prelaunch; comments; Jupiter; Swenson

PQ-307

Exotech Systems, Inc., Washington, D.C. Systems div.
PQAP's support of NASA's PQ program, by E.J. Bacon.
1 p. Outline by E.J. Bacon for PQAP meeting, Cape Kennedy, Jan. 1972.

I-II Authors III Title IV Series note

Exotech; Bacon; PQAP; Cape Kennedy; note; presentation; orientation

PQ-308

Exotech Incorporated, Washington, D.C. Systems research div.
Comments on MM '71 microbiological assay and monitoring plan, by E.J. Bacon.
2 p. Memorandum from E.J. Bacon to A. Neill, NASA, Code SB, May 26, 1970.

I-II Authors III Title IV Series note

Exotech; Bacon; Neill; NASA/SB; memo; comments; review; MM '71; assay plan

PQ-309

Exotech Systems, Inc., Washington, D.C. Systems div.
Preliminary review of Viking '75 lander capsule sterilization plan, Martin Marietta Corp., document No. PL-3701043 dated June 15, 1970, by S. Schalkowsky.
3 p. Memorandum from S. Schalkowsky to L. Hall, July 24, 1970....

I-II Authors III Title IV Series note

Exotech; Schalkowsky; memo; Hall; Viking; sterilization plan; review; comments; MMC

PQ-310

Exotech Systems, Inc., Washington, D.C. Systems div.
Viking meeting September 10 and 11, 1970 at Langley Research Center, by E.J. Bacon.
3 p. and 11 vu graphs. Memorandum from E.J. Bacon to 053 file, Sept. 14, 1970.

I-II Authors III Title IV Series note

Exotech; Bacon; memo; minutes; meeting; LRC; Viking; MMC; vu graphs; model; bioshield; models; requirements

PQ-311

Exotech Systems, Inc., Washington, D.C. Systems div.
Revised PQ requirements for Pioneer F/G, from E.J. Bacon/via S. Schalkowsky.
3 pp. Memorandum from E.J. Bacon/via S. Schalkowsky to L. Hall, July 31, 1970.

I-II Authors III Title IV Series note

Exotech; Bacon; Schalkowsky; memo; Hall; PQ requirements; Pioneer; Jupiter; P(N); P(G); T; recontamination; revised

PQ-312

Exotech Systems, Inc., Washington, D.C. Systems div.
Comments on Pioneer F/G planetary quarantine plan, undated preliminary draft PC-204, from E.J. Bacon/via S. Schalkowsky.
2 p. Memorandum from E.J. Bacon/via S. Schalkowsky to L.B. Hall, Aug. 5, 1970.

I-II Authors III Title IV Series note

Exotech; Bacon; Schalkowsky; memo; Hall; Pioneer; PQ plan; review; comments

PQ-313

Exotech Systems, Inc., Washington, D.C. Systems div.
Summary of comments compiled during review of January 14 of coordination draft PQ plan as edited by D. Fox and Exotech.
4 p. Summary report, n.d.

I Author II Title III Series note (Memorandum on Viking '73 PQ Plan)

PQ plan; Viking; memo; comments; review; draft; Fox; Bacon; Exotech

PQ-314

National aeronautics and space administration, Washington, D.C. Office of space science and applications. Planetary quarantine officer.
Planetary quarantine certification of Pioneer F, by Lawrence B. Hall.
1 p. Memorandum from SL/PQ Officer, Feb. 17, 1972.

I-II Authors III Title IV Series note

PQO; memo; Pioneer; certification; launch; Jupiter; compliance; approval; recommendation; pre-launch analysis

PQ-315

Committee on Space Research (COSPAR). Secretariat.
...Mariner Mars 1971 post-launch analysis of compliance with planetary quarantine requirements, Letter of transmittal..., from Z. Niemirowicz. Feb. 10, 1972.
1 p. Letter of transmittal.

I-II Authors III Title IV Series note

COSPAR; Secretariat; letter; MM '71; post-launch analysis

PQ-316

Meeting on mathematical analysis of the probability of contaminating the planets. April 25, 1967.
2 p. and Agenda. Minutes of April 25, 1967 Meeting.

I Title III Series note

meeting; minutes; policy; model; N; P(N); T; COSPAR; NASA; Schalkowsky

PQ-317

National aeronautics and space administration, Washington, D.C. Space science, Deputy assoc. administrator.
Letter from Henry J. Smith to Dr. W.A. Fowler and note to L.B. Hall. Feb. 16, 1972.
2 p. with note. Letter/SL.

I Author II Title III Series note

Letter; note; Viking; policy; heat sterilization; M; Mars; elimination; review; SSB; Naugle

PQ-318

National aeronautics and space administration, Washington, D.C. Office of space science and applications. Planetary quarantine officer.
...Spacecraft sterilization technology seminar. Letter concerning information discussed at the..., by Lawrence B. Hall. Feb. 23, 1972.
1 p. Letter/SL to C. Sagan.

I-II Authors III Title IV series note

Letter; Hall; Sagan; request; JPL; papers; seminar; reply

PQ-319

National aeronautics and space administration, Washington, D.C. Office of space science and applications. Planetary quarantine officer.
...Sterilization vs. off-loading science. Note to R.S. Kraemer, by L.B. Hall. Feb. 17, 1972.
1 p. Note/SL.

I-II Authors III Title IV Series note

Note; Hall; off-loading; SSB; decision; heat sterilization; Viking; policy

PQ-320

National aeronautics and space administration, Washington, D.C. Office of space science and applications. Planetary quarantine officer.
...Spore longevity. Letter to M.W. Miller concerning..., by Lawrence B. Hall.
Feb. 15, 1972.
1 p. Letter/SL.

I-II Authors III Title IV Series note

letter; spores; lifetime; P(vt); Hall

PQ-321

Hall, Lawrence B.
Rough estimate of minimum P.Q. — Viking, by L.B. Hall. n.d.
2 p. PQ Policy Considerations.

I-Author II Title III Series note

Hall; estimate; PQ (minimum); M; Mars; Viking; policy

PQ-322

[Contamination of Mars, request for information from USSR by COSPAR.] Feb. 14, 1972.
1 p. Draft for Assurance action.

I Title II Series note

COSPAR; SSB; USSR; request; assurance; international agreement; policy

PQ-323

National aeronautics and space administration, Washington, D.C. Office of space science and applications. Planetary quarantine officer.
Meeting of the NAS committee on space biology and medicine, Space Biology section, by Lawrence B. Hall. Jan. 31, 1972.
1 p. Memorandum to SL/H.S. Young.

I-II Authors III Title IV Series note

Memo; Hall; SSB; policy; review; P(g); Mars; value; heat sterilization; meeting

PQ-324

National aeronautics and space administration, Washington, D.C. Office of space science and applications. SL/Program engineer, MVM.
Data for PQ analysis of MVM '73 mission, by G.K. Strobel. Jan. 6, 1972.
1 p. Memorandum to SL/Chief, Planetary Quarantine.

I-II Authors III Title IV Series note

Memo; MVM '73; NASA/SL; P(N); Venus; deflection; aim point; atmosphere

PQ-325

PQ parameters (Viking specific). Jan. 24, 1972.
3 vu graphs.

I Title II Vu graphs on PQ Parameters, Viking.

Vu graphs; Viking; parameters; P(uv); P(r); Dv; values

APPENDIX B

Thesaurus Terms

CATEGORY 1

Medium

Abstract

Agenda

Document

Draft

DRL

Guidelines

Letter

Memorandum

Minutes

News Release

Paper

Plan

Proposal

Report

Questionnaire

View Graph

CATEGORIES 2 & 3

Originator/Recepient

AIBS
Ames
AVCO
Apollo
Bacon
Battelle
Beckman
Becton, Dickinson
Boeing
Brown
COSPAR
Detrick
Exotech
Explorer
Favero
Fox
General Electric
Green
Goody
GWUBSCP
GSFC
Hall
Heden
Horowitz
JPL
LaRC
Levinthal
Little (A.D.)
Mariner
Monsour
MMC
Martin
More
NASA
NASA/SB
NASA/SL
Neill
Nelson
Odishaw
Phoenix (PHS)
Pioneer
PQAC
PQAP
PQO
PQWG
Sagan
Sandia
Schalkowsky
Sneath
SSB
Swenson
Taylor
USAMRDC
USSR
Viking
Viking Quarantine Evaluation Board (VGER)
Vishniac

CATEGORY 4

Characterization of Contents

Action
Agreement
Allocation
Alternative
Analysis
Appreciation
Approval
Assay
Assay Plan
Briefing
Comments
Constraints
Contamination Log
Contamination Plan
Control Drawing
Correspondence
Criteria
Directive
Deviation
Certification
Definition
Estimation
Evaluation
Listing
Mission Description
Mission Statement
Model
Policy
Post-Launch Analysis
PQ Plan
PQ Provisions
Pre-Launch Analysis
Presentation
Recommendation
Request
Review
Revision
Schedule
Sterilization Plan
Status
Submission
Task
Test
Verification
Workload

CATEGORY 5

Flight Projects and Planets

Apollo
Jupiter
Mars
Mercury
MM '64
MM '67
MM '69
MM '71
MVM '73
Neptune
Outer Planets
Pioneer F
Pioneer G
Planetary Explorer
Pluto
Saturn
Uranus
Venus
Viking
Zond

CATEGORY 6

Associated Places, Organizations, etc.

Antartic
Atlanta
COSPAR
Denver
Houston
Kennedy
Leningrad
Minnesota
Palo Alto
Pasadena
Prague
Seattle
Tokyo
Williamsburg
Woods Hole

CATEGORY 7

Subject Matter

Action
Action Items
Aerosols
Allocation
Analysis
Aseptic
Assay
Assay Plan
Atmosphere
Back Contamination
Bacteria
Bayesian Statistics
Bioburden
Bioburden Model
Biological
Biological Assay
Bioshield Release
Budget
Burden
Bus Deflection
Capsule
Certification
Cleaning
Clouds
Composition
Confidence
Conservatism
Constraints
Contamination
Contamination Control
CSAD
D-Value(s)
Design
Density
Devices
Diffusion
Directive
Dislodgement
Efficiency
Efflux Ejecta
Engineering Model
Entry
Entry Heating
Erosion
Error
Estimation
ETO (ethylene oxide)
Evaluation
Experiment(s)
Facility
FA Cycle
Flight Project Document
Fracture
Freezing
Funds
Fungicide
Gaseous Sterilization
Gravity
Grinder
Growth
Hospital
Impact
Implications
Interface
International
Lander
Lunar
Maintenance
Management
Maneuver
Mated
Materials
Micrometeoroid
Micrometeoroid Dislodgement
Model
N = # of Missions
Nutrient
Objectives
Orbit
Orbit Lifetime
Organic
Organic Inventory
P_c
P(g)
P(N)
P(r)
P(uv)
P(vt)
Parachute
Parameter
PQ Provisions
Planets
Policy
Post-Launch Analysis
Prediction
Pre-Launch Analysis
Proposal
Radiation
Rate of Consumption of P_c
Recontamination
Requirements

CATEGORY 7

(Continued)

Relaxation
Release
Repairs
Resident
Revision
RTG
Sampling
Schedule
Science
Simulation
Small Population Sources
Solar Wind
Spacecraft
Species
Status
Sterile Repair
Sterilization
Sterilization Model
Sterilization Plan
Sterilization Tests
Submittal = Submission
Support
Surface
Survival = Survivability
T = Quarantine Period
Task
Techniques
Test
Thawing
Thermal Radiation
Thermal Vacuum
UV = Ultraviolet
Vacuum Probe
Value
Verification
View Graphs
VLC
Workload